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VOL. I.—9TH YEAR.

SYDNEY: SATURDAY, APRIL 15, 1922.

No. 15.

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SOME ASPECTS OF INSANITY.¹		
By J. E. F. McDONALD, M.B., B.S. (MELB.), Assistant Medical Superintendent, Hospital for the Insane, Willowburn, Toowoomba, Queensland.		
Certification.		
The first point that arises in connexion with insanity is that of certification. I imagined that every medical practitioner knows that two medical certificates were absolutely essential before a patient can be admitted to an asylum; quite lately a patient was sent here by a practitioner with only one certificate and a note from the practitioner stating that there had been no time to obtain a second certificate, but that as soon as I saw the patient it would be obvious to me that no second certificate would be necessary! The point of the matter is, of course,		
(1) It should be sufficient, that is to say, it should at once convince the mind of a third person, who has not before seen and knows nothing whatever about the patient, that the patient is insane. That means that it is not enough for the person signing the certificate to satisfy himself that the patient is insane. Thus, a patient who has plenty of money, says		
<small>¹ Read at a meeting of the Queensland Branch of the British Medical Association on February 3, 1922.</small>		

that the law says that there must be two certificates. The question as to whether the patient is obviously insane or not does not enter into the matter at all. There should be no need to remind you that the certification of a patient is a very serious matter and that grave consequences may ensue, both to yourself and the patient, unless all the legal points are strictly observed.

Do not forget that you must examine the patient independently and not with any other practitioner.

Remember that no practitioner whose father, brother, son, partner or assistant has signed one of the certificates, can sign the other.

Now as to the certificate itself! It has to satisfy a third person that the patient is of unsound mind and a proper person to be taken charge of and detained under care and treatment and you are asked amongst other things to state the facts indicating insanity observed by yourself on which you have formed this opinion.

Mercier laid down that a good certificate has three essentials:

(1) It should be sufficient, that is to say, it should at once convince the mind of a third person, who has not before seen and knows nothing whatever about the patient, that the patient is insane. That means that it is not enough for the person signing the certificate to satisfy himself that the patient is insane. Thus, a patient who has plenty of money, says

that he is ruined and destitute. That may satisfy the certifying practitioner, who knows all the circumstances, but to a third person, who knows nothing about the patient's circumstances, it is not satisfying. It is therefore essential to add that the patient's statement is not true or that it is a delusion. Similarly, other statements made by the patient should be expounded.

If you do use the technical terms delusion, hallucination or illusion, be quite certain that you use them correctly, because I notice frequently that medical men have rather hazy ideas as to the distinction between them, especially do they call delusions hallucinations.

(2) The certificate should be definite, that is to say, it should give facts indicating insanity and not inferences, a very common mistake. Thus, to state that "the patient thinks he is Governor of Queensland" is an inference, the fact being that the patient says he is Governor of Queensland. Similarly, the statement that "the patient will not answer questions," that is an inference, the fact being that the patient does not answer questions.

Speaking generally, you are right if you state what the patient says and does, not what he thinks and feels.

(3) A certificate should be clearly expressed; the simplest way to do this is to use short sentences and avoid qualifying clauses.

I must confess I feel inclined to add a fourth essential, namely, that the certificate should be legible. It is remarkable how often one gets scrawls that require an expert caligraphist to decipher, particularly does this apply to signatures.

As regards the second part of the certificate, namely, facts indicating insanity observed by others, here again it is facts that are wanted and it is necessary to give the name of the informant. I may remark in connexion with this point that facts indicating insanity said to have been observed by the certifier are often given when it is obvious from other evidence that the facts could not have been observed by the person certifying, but have been told him by someone else, e.g., the statement that "the patient has had no sleep for several nights" is not likely to be a fact observed by the certifier.

Speaking generally, my impression is that the most common and most serious errors in certificates are, firstly, that of making statements as to the patient's physical condition, such as: His knee-jerks are exaggerated; his pupils are unequal; he is very tremulous; he has lost weight, etc., as facts indicating insanity. Secondly, such irrelevant statements as "the patient has been in an asylum before"; "I have signed him up before"; "the patient has been under my care for some months"; "the patient first consulted me six months ago," etc., should be avoided. Needless to say, these facts do not indicate insanity existing at the present time.

Another error is to give a diagnosis of the particular form of insanity from which the practitioner thinks the patient is suffering as a fact indicating insanity, e.g., "the patient is suffering from the disease called paranoia"; "the patient has been suffering from melancholia for some months past." Incidentally I may remark that neither of these diag-

noses was correct in two instances of this occurrence. The first patient was suffering from *dementia praecox* and the second from general paralysis of the insane.

The following are copies of two recent certificates indicating a few faults. Neither of the certificates could, of course, be accepted. The statements profess to be facts indicating insanity observed by the practitioner.

(1) "Says he was an inmate of Willowburn and escaped twelve months ago. Has travelled on the road since, has done no work, has lived by getting food from farmers and settlers. Says he will leave here and go to Brisbane."

(2) "Has the appearance of having been drinking heavily; says there is a hotel opposite the police station."

Regarding the frequency with which the patient's physical signs are given in a certificate under the facts indicating insanity, I would like to point out that, while we are always glad to get as much information as we can as regards the patient's history and physical condition, the certificate is not the place for it. The information, I should suggest, might be put on the back of the certificate or on a separate note.

The Admission Order or Request.

In addition to two medical certificates there is necessary for the admission of a patient to an asylum either an order, generally used only in police cases, which must be signed by a police magistrate or two justices of the peace, or a request, generally used in private cases, which may be signed by anyone¹ and the signature witnessed by a justice of the peace or a minister of religion. In connexion with these documents it is necessary to remember that in the case of an order for admission the medical certificates are good for forty days from the date of examination, whereas in the case of a request for admission the certificates are good for only fourteen days from the date of examination.

When you are arranging to send a patient to an asylum, I certainly think that you should see that the order or request is sent as well as the two certificates with the patient, as the absence of the order or request means delay to the admission of the patient until one is procured.

Classification of Mental Disease.

When a patient has been duly admitted to an asylum, the next question that arises is what is the matter with him, i.e., which particular form of insanity is he suffering from? Apart from any scientific interest, it is obvious that classification is the greatest aid to prognosis.

There are many classifications of insanity and none of them is by any means final, simply because we do not yet know enough about insanity and its pathology to make a scientific classification. In any scheme which we adopt, we must from ignorance use several factors as the base of classification instead of only one factor. Thus, in one variety, e.g., toxic insanity, the factor used is the supposed cause;

¹ No medical practitioner whose father, son, brother, partner or assistant has signed the order or request or one of the certificates, shall sign any certificate for the reception of the same person (*Insanity Act of 1884, Queensland, Section 32*). But, strangely enough, the same medical practitioner can legally sign both the request and one of the certificates, though the opinion of the Crown Law authorities is it is undesirable that he should sign both.

in another variety, e.g., *dementia praecox*, the factor used is the outcome of the disease; in another, e.g., manic depressive insanity, the factor used is based on symptoms. I must confess that I feel considerably in agreement with the alienist who said there are two sorts of insanity: general paralysis of the insane on the one hand and all other forms of insanity on the other. By this classification I take it that he meant there is one form of insanity of the pathology of which we really do know something, and other forms of insanity of the pathology of which we know little or nothing.

For myself I find Kraepelin's classification the most satisfactory and consider that the conceptions we owe to him—manic depressive insanity, *dementia praecox* and paraphrenia—have greatly simplified matters, though, of course, some authorities, e.g., Mercier, would have none of them and the mere mention of such terms would almost cause Mercier to foam at the mouth.

Adopting the classification according to Kraepelin, I propose to mention with brief description the principal forms of insanity met with in asylums.

Manic Depressive Insanity.

Formerly mania and melancholia were regarded as two distinct diseases. Now Kraepelin's concept is that mania and melancholia are simply different phases of one disease and that disease is manic depressive insanity. This explains how it is that an attack of mania can replace an attack of melancholia and vice versa.

Speaking generally, the most common form of manic depressive insanity is the repeated occurrence of attacks of mania or melancholia at irregular intervals, usually of some years, which gradually decrease in length. Between the attacks, which may last for a few weeks to a few months, the patient is perfectly sane, though after, say, three attacks some mental impairment is apparent in the sane interval and this tends to increase with each successive attack until finally dementia supervenes and the patient needs permanent care in an asylum, though dementia in these cases is never so pronounced as the dementia arising from some other causes. Another and rarer form of manic depressive insanity is that in which the attacks of mania or melancholia recur at perfectly regular intervals; in this form there is no tendency to dementia.

Thus, in respect of manic depressive insanity, it may be said that if a person has a single attack of mania or of melancholia—the first attack usually occurring in the thirties—it is highly probable that he will recover perfectly from that attack, but will sooner or later develop another and so on.

There is a common form of melancholia which comes on about the age of forty to fifty years. It is sometimes called involitional melancholia and regarded as distinct from the melancholia of manic depressive insanity. Its symptoms are essentially the same as those of ordinary melancholia, but its prognosis is certainly not so good. It is now generally regarded as a sub-species of manic depressive insanity.

The great point to remember in connexion with melancholia is the tendency to suicide. I would

warn you that suicide is more likely to occur in a comparatively mild case than in a very severe one. In a very severe case, too, suicide is more apt to occur when the patient is well on the high road to sanity rather than when he is in the depths of the disease.

Paranoia.

This is a form of insanity usually developing about the fourth or fifth decade. It is characterized by the presence of a complete system of delusions, usually of grandeur or persecution or both, but with absence of hallucinations (the hearing of voices, etc.). In fact, apart from his delusions, the patient appears perfectly sensible in all respects and there is no tendency for the patient to become demented. The prognosis is absolutely hopeless.

This is a rare form of insanity in asylums, but it is possible that it is more common outside.

Paranoiacs are apt to be dangerous patients, owing to their delusions influencing their conduct and to their intellect being unaffected apart from their delusions.

Paraphrenia.

This form of insanity is closely allied to paranoia. It develops usually during the fourth decade, is characterized by the presence of a more or less complete system of delusions of grandeur or persecution or both and, in addition, hallucinations are always a prominent feature and usually take the form of "voices" calling unpleasant names or making threats or remarks about the patient's doings. Apart from the delusions and hallucinations, the patient is usually sensible enough, nor does dementia ensue. The prognosis is hopeless.

This is far more common than paranoia. Paraphrenics, like paranoiacs, are apt to be dangerous.

Incidentally, in connexion with the hearing of voices, I would suggest that, though as far as possible a patient should be allowed to tell his own story, it is always desirable to ask the patient directly if he hears voices, especially when you are dealing with paraphrenics, because their general conversation may be sensible enough and they are often cunning and silent about their delusions.

Dementia Praecox.

Dementia praecox is a form of insanity first recognized by Kraepelin. It usually develops between the ages of fifteen and thirty years and in the majority of cases rapidly leads to profound dementia. It is very common and the majority of the patients with chronic insanity, who form the largest part of our asylum population, are suffering from it.

It is a protean disease and its range of symptoms is immense. Three principal varieties are usually recognized:

(i.) The hebephrenic; the patient is simply dull, stupid, apathetic and often depressed.

(ii.) The katatonic; the patient is either noisy or excited and full of all sorts of antics and grimaces or in a state of stupor. This variety has the most favourable prognosis and though many of these patients have frequent attacks with sane intervals and then final dementia, others appear to recover permanently.

(iii.) The paranoiac; hallucinations and delusions, especially hallucinations of hearing and delusions of persecution, are prominent features; the delusions are often of the most grotesque kind.

Mild cases of *dementia praecox* are, I think, common outside asylums. Many of our bush nomads and wasters generally are probably suffering from mild forms of it.

Acute Confusional Insanity.

Acute confusional insanity is characterized by confusion as to persons and surroundings and by delirium with hallucinations and is accompanied by marked prostration and emaciation. The mental condition of the patient seems to be the direct result of the physical weakness, which may be due to any severe illness, to various poisons and to child-birth. It is not a very common variety of insanity. The outlook is favourable in the majority of cases and it does not tend to recur.

Insanity Due to Alcohol.

Cases of insanity due to alcohol are very common, though it is recognized now that, in addition to the ingestion of alcohol, something is necessary in the patient's mental make-up to produce insanity. Frequently patients suffering from insanity which has nothing to do with alcohol, come into an asylum with a history of recent heavy drinking.

There are several forms of alcoholic insanity:

(i.) *Delirium tremens* is common enough with us, though I always feel sorry that an insanity with such a short course should not be always treated in a general hospital.

(ii.) Acute delirium resembles *delirium tremens*, but the characteristic terror of *delirium tremens* is absent and the tremor is less marked.

(iii.) Acute transitory mania (*true mania a potu*), comes on after just a few drinks and shows itself as a furious, raging delirium which usually only lasts for a few hours. Consequently, it is very rarely encountered in an asylum; but I have seen a good many examples of it in Cairo among the men of the Australian Imperial Force and in Western Queensland.

(iv.) Polyneuritic psychosis (Korsakow's syndrome) is due to steady soaking, though it may be caused also by other poisons than alcohol. It is said to be much more common in women, though our figures indicate the reverse, probably because in the country drinking is so very uncommon in women. It is characterized by the presence of peripheral neuritis and a peculiar mental condition. The patient quite loses his sense of time and place, his memory for recent events goes completely and the most striking feature is illusion of memory. For example, the patient tells you he has just been to the races or down the street for a pint or that a friend has been in to see him, when nothing of the sort has happened. Some patients manifest the characteristic mental condition, but no peripheral neuritis.

Experience here seems to show that in persons over forty years the prognosis is not good; otherwise recovery usually takes place in about twelve months.

(v.) Chronic hallucinatory insanity is characterized by delusions of persecution based on hallucina-

tions, usually of voices making statements of a sexual character. The prognosis is very bad.

(vi.) In alcoholic paranoia the hallucinations are absent and usually the patient's erroneous judgements have reference to his wife's fidelity.

(vii.) Alcoholic pseudo-paresis is the result of chronic alcoholism and owes its name to the resemblance it bears to general paralysis in its early stages. Recovery usually occurs in a few months.

(viii.) Alcoholic dementia is characterized by loss of memory and general weakness of mind. It may arise from attacks of various forms of alcoholic insanity or develop slowly as the result of steady soaking. Its prognosis is bad, but as Savage says: "To the alcoholic all things are possible" and even the apparently most hopeless alcoholic demented occasionally recover.

Epileptic Insanity.

The occurrence of insanity in an epileptic seems to be determined mainly by the frequency of recurrence of the fits. Its characteristic features are religiosity and quarrelsomeness. The prognosis is very bad.

Senile Insanity.

Senile insanity may show itself as excitement, depression, delusional conditions or simple weak-mindedness. A prominent feature is loss of memory for recent events. The prognosis is hopeless.

General Paralysis of Insane.

We get very few patients with general paralysis of the insane here and there is no need to say much about it, as it is dealt with in every text-book of ordinary medicine and every medical man is familiar with its leading features.

I would like, however, to ask you to think of this disease as a possible diagnosis in any case of insanity in persons between the ages of thirty-five and fifty-five years. I may also remind you that its onset is not always characterized by grandiose delusions, etc., but that the patient may appear to be suffering from acute melancholia, simple weak-mindedness or even Korsakow's syndrome.

Terminal Dementia.

The majority of our patients are suffering from dementia of various degrees, varying from simple weak-mindedness to the most profound dementia. The characteristic features are loss of memory, failure of judgement, disorientation and degraded habits. Many of these patients are in the terminal stages of *dementia praecox*. In some the dementia has arisen from repeated attacks of mania or melancholia, in others as the result of a single attack of some acute form of insanity, such as acute confusional insanity.

It will perhaps be noticed that I have made no mention of puerperal insanity, a form of insanity which the general practitioner is likely to have more to do with than any other form of insanity, because the patients are as far as possible treated at home. The reason is that it is generally recognized now that there is no such disease as "puerperal insanity." Insanity occurring during pregnancy, the puerperium or lactation is simply one of the different varieties of insanity I have mentioned above, though the symp-

toms may be somewhat coloured by the woman's physical condition. Still it is the character of the insanity and not the particular time it arises which settles the exact diagnosis.

The most common forms occurring at these times are acute confusional insanity, manic depressive insanity (especially melancholia) and the katatonic variety of *dementia praecox* and all of these have a relatively favourable prognosis.

In just the same way, such a thing as "climacteric insanity" is not recognized in modern textbooks. Insanity arising in women about the fourth and fifth decade is usually involitional melancholia (really a sub-species of manic depressive insanity), paraphrenia or paranoia, the prognosis of all of which is unfavourable, especially the two latter.

Returned Soldier Patients.

We have had quite a number of returned soldier patients admitted during the past few years. The great majority of them are suffering from some form of alcoholic insanity acquired since their return from the front. Of other forms of insanity we have had cases of *dementia praecox* which arose some time after return from abroad and without any evidence to show that active service was responsible for them. We have one patient with paraphrenia which apparently arose while he was in France. He was returned to Australia and discharged and then admitted to an asylum after he had murdered a man.

Bodily Diseases and Insanity.

I must confess I have found little evidence of any relation between bodily disease and insanity, though I frequently have noticed that during attacks of acute illness patients are more docile and more sensible.

With a population of nearly a thousand insane patients, we naturally have a considerable amount of various bodily diseases. As far as possible *post mortem* examinations are performed in all cases. The points which have struck me most are as follows:

(a) The extreme frequency of chronic interstitial nephritis (granular kidney), both as a cause of death and found in patients dying from other causes.

(b) The rarity of appendicitis.

(c) Though I have seen very few patients in this hospital with active pulmonary tuberculosis, more or less extensive old pleural adhesions were discovered *post mortem* in an extraordinarily high percentage of autopsies.

(d) Every now and then we meet with very sharp attacks in patients of acute bacillary dysentery. My experience of the Commonwealth Serum Laboratories' anti-dysenteric serum has been satisfactory.

(e) The rarity of aneurysm, though syphilis is supposed to be such an important factor in the causation of insanity.

(f) Though we have patients of all ages and though our sanitary system is more or less the same as that of all Queensland towns, it is many years since there has been a case of enteric fever in this institution.

In conclusion, if any of you feel as a result of this paper that you would like to know more of insanity, there is one book I should like to recommend and that is Stoddart's "Mind and Its Disorders." It is

scientific and thoroughly practical in its classification and clinical descriptions. It is not necessary to believe all he says about psycho-analysis, for he is an enthusiastic Freudian. It is published in Lewis's "Practical Series." Another interesting handbook is White's "Outlines of Psychiatry," an American publication. There is one book—Mercier's "Text-Book of Insanity"—which I cannot recommend. It is a most interesting philosophical work on insanity, but I cannot imagine how anyone can get a grasp of the fundamental facts about insanity from it, though it can be read with profit afterwards. I was astonished to learn recently that it was the text-book on insanity at the Sydney University.

Finally, I would ask you to remember that insanity is seen in asylums really in its advanced stages and that it is the general practitioner who sees the patient early in the disease, before he becomes certifiable; he becomes acquainted with the early symptoms of mental disease and has the best opportunities for discovering the causes of insanity.¹

PREVENTIVE MEDICINE IN MENTAL DISEASES.

BY W. A. T. LIND, M.B., B.S.,
Pathologist, Victorian Lunacy Department.

A SECTION OF PREVENTIVE MEDICINE has been formed recently in connexion with the Victorian Branch of the British Medical Association. This movement is to put into practice the time-honoured saying, "Prevention is better than cure," and should receive the support of all members of the medical profession. One very important branch of medicine which must not be overlooked when the plan of campaign is being discussed, is that of psychiatry or, as it is more commonly called, mental diseases. Theoretically, much can be done to lessen the incidence of mental diseases. It remains to be seen whether organized effort on the part of the profession will justify the hopes of those who advance those theories.

In the Annual Report of the Inspector-General of the Queensland Lunacy Department for 1919 it is announced that the number of insane in the different Australian States at the end of 1919 varied between 2,63 and 3,97 per thousand of population, Victoria being the highest; the number of admissions during the year varied between 4.84 and 7.42 per ten thousand, New South Wales being the highest. Viewed from an economical standpoint, the accommodation and upkeep of these patients in Government institutions are a big drain upon the finances of the State. From a sentimental point of view, there is no greater upheaval and sorrow than that produced by an attack of insanity affecting a member of a family. Although legal compulsion can be freely employed in the prevention of certain diseases, such as those of filth, occupation and of a contagious nature, preventive treatment in the mental diseases requires that the professional relationship between patient and medical adviser be not impaired by any hint of legal interference, except where the patient is actually suitable for segregation. In the case of those contemplating marriage into a family with a bad

¹ The legal aspects of insanity in this paper are concerned solely with the *Insanity Act, 1884*, Queensland, 48 Victoria, No. 8.

heredity and disregarding the advice of their medical adviser, who counsels against such a course, the situation created is the same as that when people in a district with a risky water supply neglect to boil the water before consumption, in spite of warnings from the health authorities. Fortunately, the majority of people will take advice. But there are exceptions. As an example can be related the story of a young woman who persisted in her intention of marrying a young man on his being discharged from Kew Hospital for Insane, although he was obviously in a condition of partial dementia. Although the medical superintendent pointed out the inadvisability of such a marriage, in view of the chances of having defective children or children who might become insane some time during their lives, she refused to listen to the voice of experience. Her attitude was so determined that, if she had been legally prevented from marrying him, she would have been the mother of his children in an unmarried state. To prevent this kind of thing by legal measures would entail the life-long segregation of all patients who have recovered from a mental breakdown, a step which would mean considerable expenditure in increasing the accommodation in our hospitals for the insane.

Medical men in private practice as a rule have neither the time nor the opportunities to study the factors which are responsible for the production of mental disease and as the treatment of insanity cannot be carried out without a comprehensive knowledge of these factors, a general review of the subject may be of use to the private practitioner, without whose cooperation the preventive treatment of mental diseases must go by default.

The Aetiology of Mental Disease.

In the aetiology of mental diseases there are a predisposing cause and an exciting cause. The predisposing cause is the inheritance of a vulnerability of the neurone, called heredity for short. Obviously this is determined for the individual before birth. The exciting cause is stress of some nature, which either directly or indirectly impairs the health of the neurone. The manner in which some of the different stresses behave, will be discussed later on. In the meantime, a short account of the rules governing the inheritance of the dyscrasia, which is the predisposing factor, will make the study of heredity charts much easier. Though many of the facts of the science of heredity are patent, others are obscured and the relationship of nearly all has been difficult to ascertain. Up to a certain point the manner in which the offspring is related to the parent, is easy to understand, but in some of the results of experimentation and natural selection the evidence is so conflicting that it appears as if a correct or unanimous solution will never be reached. This is due to the fact that artificial and natural selection often give different results. We have the assurance, however, that the generalizations of heredity are probably as nearly fundamental as it is possible to reach in the present state of our knowledge.

Heredity.

As "like begets like," the union of the human male gamete (or marrying cell) with the human female

gamete (or marrying cell) produces the human zygote (or fertilized ovum), which develops into the human embryo, fetus and child. The human embryo grows to maturity beholden to the mother for its nutriment and liable to be adversely affected by whatever impairs the health of the mother. The embryo is developed solely from the germ cells of the parents whose somatic cells do not conjugate. At one time Darwin held that "pangenesis" was the reason why offspring resembled their parents, that is, that all the somatic cells of the parents gave minute parts which passed by means of the blood to the reproductive organs, so that each germ or sperm came to contain a set of those parts representing all parts of the body. Later on Weismann brought forward the theory that is now generally accepted, namely, the continuity of the germ plasm.

Weismann came to the conclusion that in the formation of the new individual from the germ plasm of the parents some of the fertilized parental germ plasm goes to make up the somatic cells of the new individual, while some makes up the germ plasm of the new individual. By this it is seen that the continuance of the race is through the germ plasm only or, as it is sometimes said, "the immortality of the germ plasm" or "the egg makes the fowl, not the fowl the egg." It will thus be understood that as the new individual is made from the germ plasm only, therefore any resemblance which the offspring may have for its parents is due to this ancestral germ plasm, added to the influence of whatever environment the parent and offspring have shared in common. The only way that the developing embryo can be affected *in utero* is through the mother, who is the provider of its nutrition and who can also injure it with any toxins in her circulation. The offspring is never exactly the same as its parents. The difference between the parents and offspring when that difference is "inborn" or germinal is called a "variation" and this must be distinguished from those differences called "acquired characters" due to the unequal influences of nutriment, use and injury upon the parent and offspring. Take a pair of homologous twins and bring them up under different circumstances, the one with fresh air, good food and happiness and the other in a slum, with poor food and no exercise. The difference between them when grown up will be considerable and will be due to "acquired characters." On the other hand, take two children of the same age and sex but of different parentage and bring them up under the same roof, sharing the same conditions of living and the differences between them will be due to "inborn" characters. Inborn characters are inherited through the ancestral germ plasm, while acquired characters are not transmitted to progeny. Variation is either spontaneous and depends on the germ plasm itself or due to direct action of environment on the germ plasm.

There are two kinds of variations, small and large. The small grade into one another and are called "continuous," as, for example, in the "height" of individuals we do not get "long" or "short" only, but "moderates" as well. The large variations (sports, abnormalities, deformities, mutations) are "discontinuous" or abrupt in their difference from the parent, as, for example, syndactylism.

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In practice it is not always possible to distinguish inborn from acquired characters, even when we know fully the conditions under which the organism has lived. The germ cell may be affected by toxic substances in the parent and the child which springs from it altered, while the hereditary potentialities of the germ plasm pass on to the descendants unaltered. Every individual in his own development recapitulates the development of his ancestors, so that if H represents the individual, then $ABCDEFGHI$ represents his own complete development, A to G being the line of ancestors; as has been said: "Every individual climbs his own genealogical tree." The child recapitulates with variations the life history of the race. If his recapitulation is complete, the result is progressive evolution. If he fail to recapitulate some one or several of his ancestors, he will produce an inborn variation, with a resemblance to a remote ancestor and not his parents. The origin of variability in human living beings is like the beginning of life involved in obscurity. Failure to recapitulate means retrogressive evolution. Any variation in which a characteristic of a remote ancestor occurs, is called a reversion, an example of which is sometimes seen in the production of imbeciles.

The above is a rough description of the peculiar manner in which every individual is related to his ancestors. It also shows how inborn characters are passed on from generation to generation in the germ plasm. To find out the laws governing the inheritance of characters, the monk Gregor Mendel in 1865 experimented with common peas. He crossed dwarf and tall varieties and noted the manner in which the following generations inherited the special characters of dwarfness and tallness. He found that the result was fairly constant and in definite numerical proportion. A cross between tall and dwarf gave tall progeny, which, however, did not continue to breed true with regard to this character when allowed to fertilize themselves. They produced 75% tall and 25% dwarf progeny. There were no intermediate sizes, that is, the inheritance was "alternative." "Alternative" inheritance means the developing of one or two characters and "blended" inheritance means the developing of both combined. Of the 75% talls, twenty-five on self-fertilization bred pure, the remaining fifty on self-fertilization bred impure and apparently of the same constitution as their hybrid tall parents. The dwarf plants of the second generation on self-fertilization bred true dwarfs only. Mendel considered that the tall and dwarf characters were represented by units in the substance now called germ plasm. He considered that each pollen (male) grain and unfertilized ovule (female) contained one unit for stature and therefore that each fertilized ovule contained two. One only of these units directed development and the character which resulted from its influence he termed "dominant." The latent character was termed the "recessive." He supposed, further, that before the development of the mongrel plant which sprang from the fertilized cell, the units multiplied and separated, so that in each of its pollen grains and ovules only one unit was present, a dominant unit or a recessive unit. When the plant flowered

and self-fertilization again took place, it was chance whether the units paired with units of their own kind in the zygote or with units of the opposite type. The result of experiment is as follows:

Mating.	Offspring		
	DD	DR	RR
$DD = DD$	100	—	—
$RR = RR$	—	—	100
$DD = RR$	—	100	—
$DR = DR$	25	50	25
$DR = DD$	50	50	—
$DR = RR$	—	50	50

D = Dominant and R = Recessive.

Whether the result of Mendel's experiments is due to unit segregation or, as some say, to latency and patency, the results are correct so far as the "definite proportion" of the inheritance is concerned. By latency is meant not the loss of a capacity to develop in this or that direction, but only its inactivity. Sexual characters are latent in individuals of the opposite sex, for example, the daughters of heavy bearded men tend to have heavy bearded sons and haemophilia is transmitted latent through daughters to become patent in grandsons. The result of Mendel's experiments, no matter what may be the explanation of the phenomenon, is of value in pointing out that any individual with a psychopathic inheritance should avoid mating with an individual with the same dyscrasia. The application of Mendel's law of definite proportion to the studying of heredity charts in insanity has been acknowledged difficult, if not impossible, the reason assigned being that Mendel worked under laboratory conditions, while in mankind the limitation of families, miscarriages, etc., are bound to upset all calculations. Also the results of artificial and natural selection are unlike.

When domestic animals are crossed, the development is often alternative, some blending is usually present in the first and second hybrid generations, but is not the conspicuous feature; alternative production is the conspicuous feature. If human races cross, the inheritance of parental differences is never alternative, but blended, as in the case of the cross between a black and a white race, the resultant is a mulatto. Therefore, the reproduction is not Mendelian, but the inheritance of many mutations is alternative or Mendelian, for example, polydactylism, colour blindness, deaf mutism, etc. (a mutation being a permanent variation, which selection alone can eliminate).

Sir E. Ray Lankester states that imbecility in 90% of cases is an hereditary taint or reversion, although it may from time to time appear as a sport, that is to say, without history of hereditary taint, thus the inheritance will tend to be Mendelian.

The study of the heredity charts of the insane will satisfy the student that hereditary influences are present in both acquired and congenital insanity, the latter showing stronger evidence of phyletic degeneration than appears in the acquired insanities.

In the idiots there is in many cases found *post mortem* good reason to believe that the products of conception were subjected to the influence of syphilis, which could alone have brought about the maldevelopment of the nervous system, with consequent

idiocy, without any need of a psycho-pathic inheritance.

The position appears to be that the inheritance of the vulnerability of the neurone is alternative and gives the definite proportion discovered by Mendel, but the varying changes of human existence so alter the heredity charts that they do not show the complete Mendelian proportion of neuropathic inheritance. The position is further complicated by the fact that it is the addition of a stress which produces the attack of insanity, without which stress the individual would have appeared in the chart as normal.

Heredity being present, the necessary degree of stress brings about the mental disease. If the vulnerability of the nerve tissue is considerable, a small stress may upset the mental stability of the individual, but if there is little vulnerability, the stress will require to be severe in order to produce insanity. The brains of those with new inheritance of neurone vulnerability may be likened to a series of combustible fluids with different "flashing" or "flash" points. To be safe for burning in a lamp, kerosene must have a "flash point" above the temperature to which the kerosene in the lamp during ordinary use might be raised, otherwise there will be an explosion. Some brains have a low "flash point," which means that the individual must live an existence as free from stress as is possible in order to avoid a breakdown. Others have a "flash point" high enough for the ordinary stresses of life, but not high enough for a very severe stress. There have been individuals who have lived to nearly one hundred years of age and only at the last when organic changes take place have they shown senile mental disturbances. Unfortunately, there is an affinity between these psycho-pathic individuals, who mate and produce an intensification of the vulnerability in their progeny. Some authority has said that this may be regarded as Nature's way of getting rid of the unfit.

Stresses.

The classification of stresses varies according to different authorities, but that is merely a matter of arrangement, as the items are practically the same. A few of the different exciting causes will be mentioned.

Psychical.

Worry, grief and fear are good examples of this class of exciting cause. The patient suffers through the reflex over-action of the autonomic and sympathetic systems. The dryness of the mouth of a normal individual during moments of intense anxiety is a well-known example of this sympathetic reflex. It can be easily appreciated that the same mechanism, acting throughout the whole economy, will produce changes in the pulse tension and alteration in glandular secretions to such an extent that the normal nutrient supply to the brain is impaired.

Toxæmia.

Whether bacterial or metabolic in origin, this may be the exciting cause of an attack of insanity.

Chronic kidney disease, copräma, pyorrhœa, tuberculosis and syphilis are common examples of this kind of stress.

Malnutrition.

Insufficient food or the wrong kind of food and anaemia, causing a poor supply of oxygen to the neurones, may produce a mental breakdown in the predisposed.

Organic Changes in the Brain.

Organic changes in the brain, pathological changes in the membranes and atheroma of the cerebral vessels may cut off the nutriment of the neurones and prevent the effete products of the cells getting away, thus interfering with the health of the neurone.

Alcohol.

Alcohol, being a toxic agent, acts upon individuals similarly to other toxins. Individuals vary considerably in their reaction to alcohol, so that what is a toxic dose to one, is productive of little effect in another. This is due partly to the fact that psycho-paths are very susceptible to its action and partly to an immunity that constant use may give. The appearance of drunkenness in an heredity chart is found more often in the congenital insanities, where its very frequent occurrence is an indication of phyletic degeneration so common in these cases. Drunkenness in these cases being secondary to the lack of self-control, it should not be recorded as the stress responsible for the mental condition.

Preventive Measures.

"Do men gather grapes of thorns or figs of thistles?" If all the people who came from insane stock could become sterile, the incidence of insanity would be considerably decreased in a couple of generations. Those who are not capable of taking care of themselves or who are actively insane, are already segregated, but there is no provision for curtailing the sexual liberties of the high grade imbeciles, the intellectually deficient or the persons who have recovered from acquired insanity. It is these who perpetuate the defective stock whence spring the annual receptions to the State institutions for the care of the insane and to a large extent to the industrial schools and gaols. There are many harmless but mildly intellectually deficient persons earning an honest livelihood and at the same time contributing in their offspring to the lowering of the standard of the race. It is not for the more fortunately endowed members of the community to insist on these people submitting themselves to an operation for sterility. On the contrary, such a practice, which is in vogue in one at least of the American States, is out of place in these days. There are weighty arguments against this procedure, which cannot be discussed here. Those who bear within them the possibilities of transmitting insanity, should be educated in the means of preventing conception. They should be told of the reasons why they should not have children and properly advised as to which of the many contrivances used for that purpose would be suitable for their station in life and intelligence. The more intelligent should be

advised to read Dr. Marie Stopes book, called "Wise Parenthood."

If any of the intellectually deficient people or morons, as they are called, commit an offence against the law of the land, let it be the last time that he will get an opportunity to do so. On arrest he should be certified insane and committed to a permanent segregation colony, where he will have no opportunity to reproduce his kind. Those individuals who have a low "flash point," should be advised to remain childless and those contemplating marriage with those of a low "flash point" should be told of the consequences likely to accrue from such a union. Education in this subject will do a great deal to help the prevention of the transmission of insanity through incorrect mating. Passive eugenics should be taught to every advanced student in the secondary schools. In certain colonies, where in early days the white settlers made concubines of the black women, there were so many white girls with coloured blood that the dread of a "throw back" to a dark skin forced the young men to travel abroad in search of wives. It is quite reasonable to expect that once it becomes common knowledge that marriage into a tainted family carries with it the possibility of a "throw back" to insanity, then our young men and women will be afraid to mate with members of such families, at any rate until they have consulted a medical man. This is all that can be done to prevent the psycho-paths reproducing their kind. So long as these individuals do not break any of the laws of the country and are able to support themselves, no legislature would dare to deprive them of their liberty nor force them to submit to any form of operation which would make them sterile.

The question of syphilis as a factor in the production of insanity requires special mention. It is the cause of general paralysis of the insane, primary dementia, the majority of the cases of epileptic insanity and idiocy and many cases of the other insanities. The type of insanities received into the mental hospitals nowadays differs considerably from what it used to be about thirty years ago. The manias and melancholias have been replaced by early dementias and general paralysis of the insane which owe their origin to syphilis. There is considerable occult syphilis in the community revealed by the Wassermann reaction in the serum of children of general paralytics who have been received into the Victorian mental hospitals for the insane.

By occult syphilis is meant unsuspected syphilis, discovered only by investigation which has been prompted by the discovery of unsuspected syphilis in one or both parents. This occurs when an individual has passed through the earlier stages of the disease without any external manifestations that might suggest the nature of the ailment and shows the first indication of the nature of the disease when symptoms of general paralysis become evident. This is not at all uncommon in lunacy practice. Apparently many of those suffering from syphilis are not carrying out treatment faithfully until quite free from the disease, judging from the number of congenital syphilitics who reach the mortuaries of the

mental hospitals. If wall sheets similar to those posted at the ends of piers describing how to resuscitate the apparently drowned, were suitably worded and placed in the lavatories of schools, banks, commercial firms and factories, the principles of sex hygiene could be clearly stated and youth would be educated to regard venereal as a filth disease and not, as it often is now, as a joke. It would also help to counteract the pornographic scribblings which usually adorn the walls of such places.

Those individuals belonging to psycho-pathic families should be advised concerning their mode of life and occupation. Their lives should be as free from mental and physical stress as circumstances will permit. This, combined with moderation in work, exercise, food, drink, etc., may carry them over the dangerous times of adolescence and the climacteric, when excess might have led to a mental breakdown. If people with psycho-pathic inheritance called in the services of a medical man when they have attacks of listlessness and "down in the dumps" as readily as they do when they are suffering from an ordinary heavy cold, many of the attacks of insanity might be averted. A complete change and holiday at that stage might prevent more serious happenings. Practically every attack of acute insanity, even the manias, has a preliminary period of depression, which is nearly always ignored by the relatives, who regard it as the ordinary "not felling well." For the patient in the incipient stage, who can be helped so much and successfully, the Victorian mental hospitals have the system of voluntary boarding. By this method of treatment the patient is not certified and lives at the mental hospital as a boarder, receiving suitable treatment at expert hands. This keeps the patient under observation and prevents him from doing any injury to himself or anyone else. In the papers he signs on reception he agrees to give three days' notice of his intention to leave the institution, so that if, in the opinion of the medical superintendent, the patient is regarded as being unfit to be at large, there is ample notice in which to have him certified as insane and legally kept there till fit to be discharged.

What is most urgently required in every large town is an out-patient department for patients on the border-line or those in whom the oncoming of insanity is suspected. As these patients require expert advice and for obvious reasons the out-patient department must not be in any part of a mental hospital, the requirements could be met by establishing it at one of the general hospitals or by having a special hospital for nerve diseases with a psychiatric section. Arrangements could be made to secure the services of the experienced medical superintendents from the mental hospitals. In olden days the survival of the fittest kept down the number of insane and other weak stocks. To-day civilization casts a protecting arm around them and enables them to procreate more unfit. It is, therefore, incumbent upon civilization to take steps to lessen the incidence of these diseases which impair the national efficiency, by means of all the preventive measures which experience and science can suggest. It has been argued that the psycho-pathic temperament pro-

duces genius and many illustrious poets, musicians, etc., have been mentioned as examples of genius who would have been lost to the world if passive eugenics had been in force at the time. The answer to that has been supplied by one of Britain's leading psychologists, who said something to the effect that it is better to forego one genius than be saddled with ten thousand defectives, which is the price the country would have to pay. As an example of what a loss to the country these defectives are, the oft-quoted example of the "Jukes" family may be cited. It is calculated that the descendants of one defective were a direct loss to the United States of America of no less than £260,000.

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PLAQUE EXPERIENCES.¹

BY R. W. HORNABROOK, M.B., M.R.C.S.,
Melbourne.

A QUESTION frequently put to me by laymen is: "What is plague?" Well, if you want to know what plague is, plague is a filth disease. In other words, it is a disease that cannot possibly make headway against four things:

(1) Destruction of rats. This is most important, but in conjunction with this there must also be:

(2) Absolute cleanliness. By that I mean not merely personal cleanliness, but cleanliness in your house and surroundings, cleanliness in your back yard; no refuse should be left about, fowl run kept clean and free from rats. To use an expression of the Service: "There must be man-of-war cleanliness about this ship." This applies not merely to dwelling houses, but to business houses, back streets, yards and lanes.

(3) Fresh air. In my own plague hospitals in India and Africa doors and windows were never allowed to be closed, the patients being supplied with more blankets if they felt the cold. Floors, walls and ceilings were white-washed, so that any dirt being about was at once seen.

(4) Sunlight. The greatest enemy the plague germ itself has is the disinfectant that Heaven herself provides, *viz.*, sunlight. The plague germ cannot live and flourish in direct sunlight. All Haffkine's plague prophylactic broth cultures were grown in the dim religious light at Parel Laboratory in Bombay.

By paying attention to the last three items in conjunction with the first, the life of the rat is made harder, for, like the plague germ, he also likes uncleanly habits and dark ways.

It is impossible for me this evening to give you anything like an account of my experiences on

plague duty in India and Africa, but I can, if you will permit me, draw your attention to some interesting points:

1. On arrival in hospital the patient was always given (if an adult) a dose of magnesium sulphate and calomel. This was followed on the following morning, if the bowels had not been freely opened, by castor oil in brandy.

2. If the temperature was 39.4° C. or over, one gramme (fifteen grains) of antipyrine was given and this dose was repeated if necessary in a few hours, so that some patients had as much as three gramme doses of antipyrine in the first twenty-four hours. The antipyrine had a marked influence in controlling headache, delirium and restlessness. The precaution was always taken of giving thirty cubic centimetres of brandy about twenty minutes after the antipyrine. I did not once see any ill-effect result from the administration of this drug.

Nourishment was given in small quantities at frequent intervals.

In the acute stage the patients were given nourishment at 7 a.m., 9 a.m., 11 a.m., 1.30 p.m., 4 p.m., 7 p.m. and brandy, egg and milk twice during the night. I found this mixture of brandy, egg and milk, which was given five times in twenty-four hours to patients with plague in the acute stage, of considerable benefit in maintaining his strength and helping him to tide over the first few early and very dangerous days of his disease.

In a properly constructed plague hospital there should be wards for observation, that is for patients concerning whose illness there is any doubt as to the diagnosis of plague, wards for patients in the acute stage of the disease and wards for convalescents. Patients go into these wards about the seventh to tenth day. Lastly, there should be wards for patients with pneumonic plague.

Under no circumstances should a patient suffering from pneumonic plague be placed in a ward with patients suffering from ordinary bubonic plague, for, if it is done, it is quite possible that a patient with pneumonic plague may infect with pneumonic plague a patient with the ordinary form. We must remember this, that bubonic plague is really a localized form of plague, at least in the early stages, and the bubo is Nature's attempt to hold up the germ and, if successful in this, the patient has every chance of recovery. The longer the germ is held up in the bubo, so much the longer is the patient given the chance of creating his own antitoxin. Provided that a patient can be carried over the first five days of his acute illness, the chances of his recovery are far greater than his liability to death.

In one case where I very foolishly gave way and permitted a patient suffering from pneumonic plague to be placed in the same ward as two of his relations who were suffering from bubonic plague; these two, who were doing well at the time, contracted pneumonic plague and both died within forty-eight hours.

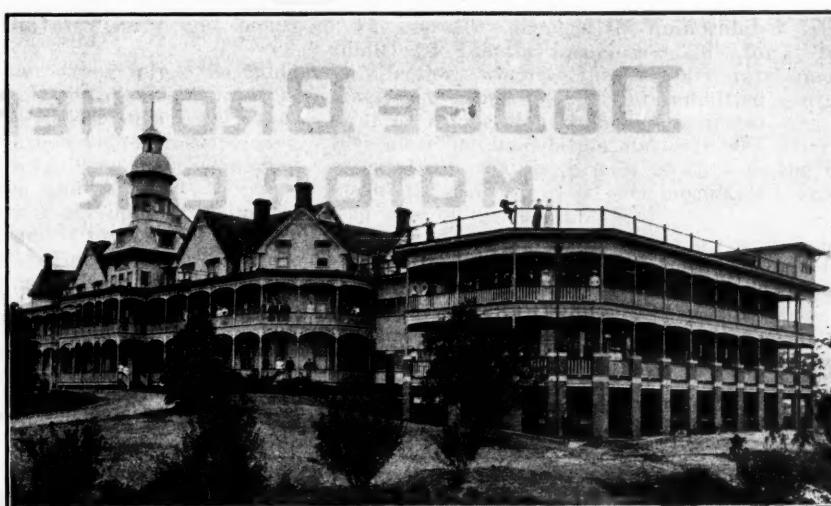
The danger of the pneumonic form is exemplified in the following: One of my nurses, a little Irish girl, who had a habit of carrying round patients from one bed to another if they had to be moved

¹ Read at a meeting of the Preventive Medicine Section of the Victorian Branch of the British Medical Association on December 8, 1921.

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(a habit to which I did not object), one day lifted up a patient with pneumonic plague in her arms. The patient coughed in her face; she received infection through the eye, some of the sputum landing on the conjunctiva. Within a few hours pneumonic plague developed and she died forty-eight hours later.

I cannot condemn in too strong terms the habit of puncturing an acute plague bubo; unless it is absolutely essential for diagnostic purposes, I think the act is criminal. As I said before, the ordinary bubonic plague is really a localized form of plague, at least in its early stages, and the man who punctures a bubo is certainly, in my opinion, doing an unjustifiable act and not really thinking of the best interests of his patient. He leaves a loophole through the punctured capsule for the bacilli to gain entrance into the general circulation and I certainly think encourages a septicemic form of plague to develop. As a rule, when a plague epidemic is on, the general symptoms that the patient exhibits should be quite enough in helping the medical man, if he has any knowledge of plague, in making his diagnosis. He has much to guide him. In the first place, almost invariably sickly, dying or dead rats precede an outbreak of plague. Then we have the signs in the patient, his acute illness, very often injected eyes with a far away look in them, his slurring speech, his uncertain walk, the dirty tongue with prominent papillæ, the exceedingly acute pain in the bubo, so that even before one touches it the patient begins to draw away, the headache and very often backache.

Of course, there are occasions when the practitioner may feel that he is justified in puncturing an acute plague bubo, especially at the commencement of an epidemic, but as a routine I think the practice cannot be too strongly condemned, for I do not think that there is any question but that the risk of the patient getting a general infection is increased thereby.

The above remarks do not apply to the septicæmic and pneumonic types of plague, in which the patient has a general infection from the onset.

This is also an entirely different thing from opening a bubo when it is in the suppurating stage. This stage does not as a rule occur under ten days or a fortnight. Our practice was always to incise suppurating buboes if they had not anticipated our action by bursting.

Suckling infants were never separated from their mothers and in not one instance did I ever see a suckling child contract the disease.

The advantages of inoculation with Haffkine's plague prophylactic vaccine as a measure against contracting the disease and also as lessening the risk should the person contract plague after inoculation, cannot be questioned.

Out of thirty-six attendants at the Dharwar Hospital from the months of August, 1898, to January, 1899, during which the epidemic was at its height, six attendants contracted plague. All were uninoculated. Not one of the inoculated acquired the disease. Of the six who contracted it, four had pneumonic plague and of these four two were attend-

ants on patients with pneumonic plague at the time; one was a man who washed the soiled linen clothes and the other was one of the hospital cooks. All these four patients died. The two with bubonic plague recovered.

The mortality amongst the uninoculated patients admitted to hospital was close on 58% for all forms of infection, whereas the recovery rate amongst ninety-nine inoculated patients admitted (out of a total of nearly eight hundred patients) was over 70% after one inoculation and over 80% after two inoculations, that is, a gain of 38% in the twice inoculated and 28% in the once inoculated over those who were uninoculated.

The staff and nurses in a plague hospital should be inoculated twice with Haffkine's prophylactic at an interval of about eight days; both doses should be full doses. The injection should be made into the loose tissue of the left upper arm and not into the muscle. By injecting into the loose tissue, the injection is less painful from inflammatory swelling; should by any chance trouble occur and an abscess form in the loose tissue, it gives rise to no trouble, but in the muscle it may cause considerable harm. I have seen a biceps ruined by injection into the muscle.

The prophylactic should be fresh, if possible, and it is better not to use it over six months old. At the same time, I have injected my own arm with Haffkine's prophylactic that has been kept for over two years in a sealed bottle and obtained a typical reaction.

We used to consider that inoculation with Haffkine's prophylactic would give good protection for from five to eight months. I do not know if this opinion has been changed in more recent years.

I am of the opinion that Haffkine's prophylactic does not lessen the risk of a patient dying from pneumonic plague, should he be so unfortunate as to contract this form of plague after he has been inoculated, but it does lessen the risk of his contracting it. This opinion was also held by the late Captain Leumann, of the Indian Medical Service, who did a large amount of inoculation work with me in India. Captain Leumann was in charge of the town of Hubli, of 40,000, about forty miles from Dharwar, and it was in the towns of Dharwar and Hubli that Haffkine's plague prophylactic work was first done on a large scale. The inhabitants of both these towns were injected by thousands and whereas the uninoculated were not permitted to live in any area declared plague infected, we always permitted our twice inoculated persons to remain in the infected area, thus subjecting them to the increased risk; but in spite of all this, the infections amongst the inoculated were very few and far milder in character in comparison with the uninoculated. I used to inoculate from 150 to over 300 persons every morning, at the rate of two a minute or 120 an hour; but to do so your staff must be well organized, for records had to be taken of the name, age, sex of each patient and the date of inoculation, the arms had to be prepared and a fresh needle used for each individual. In only one case did I get an abscess and that was in a patient who applied a cow-dung poultice to her

arm soon after injection. Each native paid two annas for inoculation, which was half a day's pay for an adult. It was only when we started to make the natives pay for inoculation that they came forward in thousands. When we gave it to them for nothing, we could not get them to come forward, but when the Sahib said "Pay up!" they said to themselves: "This must be something good, for the burra Sahib makes us pay for it." Pauper inoculation tickets of a pink colour were issued to those who could not afford to pay; those who paid were given white ones. The result of this move was we found there were no paupers, but that all could pay. Such is human nature.

Perhaps the hospitals in this country might find the above hint useful.

Such are some of my experiences, but in work extending over a very large area of the Bombay Presidency and in Africa from Mombassa to Cape-town, work done not merely for our own British Government, but also for the German and Portuguese Governments, I had many experiences that would fill a volume if I started on them. So I must stop with apologies for having already used up much of your time.

Reports of Cases.

DIFFUSE CRANIAL OSTEO-MYELITIS AS A SEQUEL TO NASAL ACCESSORY SINUS SUPPURATION.

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Introduction.

This complication of nasal accessory sinusitis has a high mortality, but is fortunately rare.

McKenzie⁽¹⁾ recently collected forty-four cases from various sources in the literature. Of these, forty-one originated in the frontal sinus and three in the maxillary antrum.

Those originating in the frontal sinus are shown in the following statistical table, which is self-explanatory:

Clinical Type.	Number.	Result—		Mortality.
		Death.	Recovery.	
Post-Operative	20	20	0	100%
Spontaneous	21	14	7	66.6%
	41	34	7	

Pathology.

Why osteo-myelitis should arise in some cases of sinus infection and not in others is unknown. It has been thought that the contiguity of the diploic tissue of the frontal bone to the walls of the sinus is a factor. On the other hand, there is evidence that in some cases the disease process commences in the thin bones forming the inner angle of the orbit, which are devoid of diploic tissue.

By whatever path the infection reaches the bone, it tends to spread and the extent to which the cranial bones may become affected is practically unlimited. The unrestricted extension is generally attributed to thrombo-phlebitis of the diploic veins and in some cases this has been found far in advance of the general bone disease.

The affection of the bone is a purulent rarefying osteitis, leading to more or less destruction of all its constituent elements. The diploë is converted into granulation tissue bathed in pus and this pus, finding its way to the outer and inner surfaces of the bony cranium, collects to form

abscesses, either between the bone and pericranium or between the bone and *dura mater*.

The pericranium gives way in places and the abscesses come to lie in the soft tissues of the scalp. Though multiple, they are usually separate and discrete and form the doughy or puffy swellings which are such a striking clinical feature of the disease.

The *dura mater*, unlike the pericranium, shows little tendency to break down and forms an efficient barrier to the infection for a very considerable period, thus protecting the soft membranes and brain.

The tables of the skull are destroyed, the external giving way before the harder "vitreous" internal and finally sequestra of various sizes are formed.

The extension of the disease is generally in an upward direction and may involve the whole vault of the skull, as in the adult there is continuity of bone across the suture lines. However, sometimes the extension is downwards and involves the bones at the base of the skull. Metastatic abscesses are uncommon. Extension is local rather than general and, apart from extra-dural abscess and pachy-meningitis, the results of local extension in order of frequency are: Lepto-meningitis, cerebral abscess, intra-cranial thrombo-phlebitis and sub-dural abscess.

As the *dura* forms such a good protection, lepto-meningitis generally only occurs when the infection spreads to the base of the skull and invades the lepto-meningeal spaces through the nerve sheaths of the labyrinth, orbit or cribriform plate.

Septic thrombo-phlebitis has been found to affect the superior longitudinal, circular, petrosal and even the lateral sinuses. Its development is due to the extension of the thrombosis in the diploic veins. It is in these cases that pyæmia and metastatic abscesses are most likely to occur.

Clinical Aspects.

Cases may be divided into acute and chronic. The acute have a duration of three weeks to three months. The chronic have a duration of six months to two years.

In the acute form, clinical events follow one another closely. The pyrexia is usually continuous and the progress of the disease is uninterrupted by periods of quiescence.

In the chronic form the disease develops more slowly and its progress is broken. Phases of activity, with pyrexia and abscess formation, alternate with periods of quiescence in which there is absence of general and local signs. These latent periods may continue for months and give the impression that all is well, but sooner or later the disease lights up again.

Spontaneous osteo-myelitis generally occurs with an acute sinusitis and diseased bone may be found at operation when the sinus is opened.

In the post-operative cases the onset is very insidious and valuable time may be lost before a diagnosis is made. The incision, which may have almost healed, slowly breaks down and some swelling and slight pus formation occurs. The swelling has a pale, puffy character and there is none of the smart reaction which accompanies wound re-infection. If the sinus is re-opened, the surrounding bone will be found to be of a dead-white colour and, if a piece be removed, pus will be seen oozing from the cut edge. General symptoms accompany the onset of the local disturbance.

Sooner or later the appearance of an œdematous swelling in the soft parts, at some distance from the sinus of origin, testifies to the extension of the disease to the diploë. It is characteristic of this osteo-myelitis that the peri-cranial abscesses, which induce these swellings, are discrete and separated from each other by areas of seemingly healthy, though somewhat œdematous tissue, their confluence being prevented by peri-cranium which in parts has not broken down.

Treatment.

Once osteo-myelitis has begun, radical surgical procedures, involving the removal of the whole of the diseased bone and a considerable margin of healthy bone beyond, are the only treatment that will save the patient. Conservative treatment, such as opening the external abscesses as they form, removal of loose sequestra and the evaca-

tion of extra-dural collections of pus, may frequently bring the process to a temporary standstill, but will not effect a permanent cure. After weeks, or even months, another swelling appears in a new area and the disease takes another step forward and continues until the patient dies either of toxæmia or of an intra-cranial complication. Large areas of the vault may be resected with impunity and if all diseased bone is removed, the defect will soon be made good by osseous regeneration.

Reported Cases.

The following are typical cases which have been reported in the literature of late. They serve to illustrate many of the features of the disease, as well as the efficacy of the treatment advocated above.

Tilley⁽²⁾ describes a case of acute frontal sinusitis, with redness and œdema over the sinus. At operation it was found that the sinus contained pus and the anterior wall was red and soft. At the margin of the sinus points of pus were seen in the diploic spaces. The patient lost ground in spite of free drainage and six weeks later a large flap was reflected. The whole frontal bone was inflamed and partly necrosed. Loose portions were removed and in two places inflamed *dura mater* and brain substance came away with the bone. After free drainage the flap was replaced and sutured. The patient made a prompt recovery and was able to go home in a fortnight.

Mollison⁽³⁾ reports the case of a boy, aged fifteen. He had much tenderness and swelling over the forehead, with œdema of both eyelids. The tenderness and œdema were greatest over the left frontal sinus. At operation pus was found in the sinus. The bone was somewhat avascular and minute beads of pus oozed from the cut edges. Bone was removed till a healthy cut surface was reached. This meant removal of the frontal bone from one external angular process to the other and for more than ten centimetres in a vertical direction. The patient made a good recovery and four weeks later the flaps of skin were replaced and sutured.

MacLay⁽⁴⁾ reports a post-operative case which recovered. The patient underwent an intra-nasal operation for pan-sinusitis. In the operation, both maxillary antra were opened, the ethmoidal labyrinth dealt with and the fronto-nasal passages were enlarged. A month later the patient complained of headache. On examination there was œdema over the area of the left frontal sinus, the root of the nose and both upper eyelids. At operation necrosis of the left nasal bone, together with portions of the left lachrymal bone of the nasal process of the left maxilla and of the nasal process of the frontal bone was found. These bones, together with anterior wall and floor of the left frontal sinus, were removed, as well as outer table of the frontal bone above the sinus, where there was unmistakable evidence of osteo-myelitis. Improvement followed, but the headache did not altogether disappear. A month later a circumscribed œdematous swelling appeared higher on the forehead. The œdema of the eyelids reappeared and the constitutional signs increased. A necrosed piece of bone the size of a florin was removed. The margins of the bone contained pus and granulation tissue between the tables. This was nibbled away until what looked like healthy bone was reached. Bismuth and Iodoform paste was then applied to the cut edges. Three weeks later another puffy swelling appeared in an adjacent area and more bone was removed, including the walls of the right frontal sinus. An extra-dural abscess was also evacuated. This melancholy history was repeated on four subsequent occasions, the last operation being performed some five and a half months after the first intra-nasal operation. During this period the greater part of the left half of the frontal bone up to the coronal suture was removed and a strip ten centimetres wide of the right half up to the same suture. When once the septic process ceased, healing took place rapidly, leaving the large, pulsating dural area covered only by scalp. New bone formation took place rapidly and covered over the exposed *dura*. Three months after the last operation there remained only an area of *dura* the size of a florin where pulsation could be seen. Subsequently the pulsation became barely perceptible.

Author's Case.

The following case which occurred under my care, has some interesting features and is thought to be worth putting on record:

P.R., male, aged twenty-four years, admitted to hospital on August 2, 1920, stated that he had always been healthy until a week before, when he contracted a heavy cold in the head. Two days later a severe pain occurred over the left eyebrow. Two days after that the left eyelid began to swell. On August 1, 1920, a severe pain on the right side of the chest manifested itself.

On examination it was found that the temperature was 39.4° C. (102.6° F.), the pulse-rate 116 and the respiratory-rate 28. There were redness and œdema, with great tenderness over the left frontal sinus. The left eye was closed from œdema of the upper eyelid. The nasal septum was greatly swollen, causing complete nasal obstruction. Examination of the chest disclosed an area of consolidation at the right side.

On August 3 blood-stained serum and pus were evacuated from the nasal septum. A skiagram showed blurring of the outline of the left frontal sinus.

On August 4 an incision was made over the inner third of the left eyebrow and about fifteen cubic centimetres of pus were evacuated from the roof of the orbit. A small opening was made into the frontal sinus, which contained pus. A drainage tube was inserted and the incision partly closed. From the pus from the sinus, orbit and septum *Staphylococcus aureus* was grown in pure culture. No reaction was obtained to the Wassermann test.

On August 8 pus was evacuated from a fluctuant swelling over the left external angular process.

On the tenth a circumscribed œdematous swelling appeared just above the glabella region. Forceps were pushed up under the peri-cranium from the incision over the frontal sinus and pus was evacuated, leaving a depressed area with a raised margin.

The patient was very ill until August 13, 1920, and was coughing up large quantities of purulent, blood-stained sputum. He was delirious at night and occasionally passed his motions into the bed. From this date he improved rapidly, but his temperature continued to rise in the evening to 37.2° C. (99.6° F.).

On August 17 the nasal septum again became swollen and pus was evacuated.

Up to September 9 the temperature continued to be 37.2° C. every evening. An œdematous swelling now appeared high up on the forehead, a little to the left of the mid-line and extending into the hairy scalp. Its centre was about 7.5 cm. above the eyebrow. A skiagram showed an area of rarefaction of the frontal bone extending from the sinus upwards. A large incision was made over the puffy tumour and pus was evacuated. The bone was found to be eroded and it had a worm-eaten appearance.

Another œdematous swelling appeared on September 22 to the right of the mid-line at the margin of the hairy scalp. Pus was evacuated and the bone was found to be eroded.

The patient complained of headache during the week ended September 30 and had vomited after breakfast the last two mornings.

Headache continued till October 6, but had disappeared on October 7. While the headache was present, the evening temperature varied as usual between 36.3° C. and 37.6° C. (97.4° F. and 99.6° F.).

The patient felt so well during the following month that he wished to be discharged to the out-patients' departments. The incisions were kept open and loose sequestra removed from time to time. After the initial incisions were made very little pus has been discharging.

On November 26, 1920, the patient felt so well that he requested to be allowed to commence light duty at his former occupation. He attended the out-patients' department daily for dressing.

On December 7, 1920, the patient complained of severe headache, which had been present during the preceding three days. He also noticed that the vision in the left eye was failing. His complexion was muddy, his breath offensive, his tongue dirty and his pulse-rate 50 to 60. There was no optic neuritis and the defect of vision in the left eye appeared to be due to a large central scotoma. Previous examinations of the fundi showed an absence of optic

neuritis and the vision had been normal with the correction of an error of refraction.

On December 11 the patient was more drowsy and was irrational at times. The pulse-rate was 40. A large flap was turned down to see if any extra-dural collection of pus was present, but none was found.

Death occurred on December 17, 1920, from respiratory failure.

At the autopsy it was found that the greater part of the left frontal bone was necrotic. The area of necrosis extended from the left external angular process to about 2.5 centimetres to the right of the mid-line and about ten centimetres vertically. The posterior wall of the frontal sinus was necrotic, as was the left half of the cribriform plate of the ethmoid. At one place a sequestrum was firmly adherent to the *dura mater* and the subjacent meninges were also adherent. This appeared to be the path of infection of a large, thick-walled abscess in the left frontal lobe. The formation of this abscess probably dated from the end of September, when the patient had a period of headache and vomiting.

Conclusions.

Interesting features in connexion with this case were:

1. The necrosis of the left half of the cribriform plate of the ethmoid. Suppuration in this region is nearly always followed by lepto-meningitis, from spread of infection along the sheaths of the olfactory nerves.
2. The absence of optic neuritis in spite of the large abscess and greatly increased intra-cranial tension.

This case also serves to illustrate the ultimate end of this disease unless radical measures are undertaken as soon as the condition is diagnosed. However, it is doubtful if even radical procedures would have availed in this case. Complete removal of all the diseased bone did not appear feasible, as pus tracking down the septum suggested implication of bone at the base of the skull.

When signs of a cerebral abscess developed, owing to the large area of diseased bone, it was impossible to determine at what point the infection had commenced and where adherent membranes would be found through which to explore and evacuate the abscess.

My thanks are due to Dr. M. E. Lynch for permission to publish this case.

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Reviews.

MICROBES IN NATURE.

TEXT-BOOKS and treatises on bacteriology are usually written for students and are devoted to one or the other branch of microbiology, such as agricultural or medical science, brewing, etc. Marshall "Microbiology," however, is written from an entirely different point of view. In it microbes and their life histories are discussed in a general way and the rôle they play in the household of Nature is discussed.¹

The book should therefore appeal to a much wider circle

¹ "Microbiology: A Text-Book of Micro-Organisms, General and Applied," by Various Authors; Edited by Charles E. Marshall; Third Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Son & Company; Demy 8vo., pp. 1,043, illustrated by 198 figures. Price: \$4.00.

of readers than the title might suggest and every educated person of average intelligence should be able to gather a great deal of interesting information from its perusal. The fact that a new edition has been necessary since the 1917 edition speaks well for the favourable reception of the previous editions.

The book has been edited by Marshall, an agriculturist, and the different chapters are written by twenty-five contributors, several of them well known in the realms of microbiological study. As in the case with every book written by many contributors, a unity of purpose seems greatly lacking in this book. Glancing through from chapter to chapter it becomes clear that several aspects, such as the microbiology of the soil, are dealt with at considerable length, whereas others, such as the microbiology of diseases of man and domestic animals and insects, are given relatively meagre consideration.

The page or two on technique, bacteriological and protozoological, seems unnecessary; it would not enable anybody not versed in technique to stain a single film.

The book is divided into three parts: "Morphology and Culture," "Physiology" and "Applied Microbiology."

Microbial cytology is considered in a somewhat cursory manner. The complex structure of yeasts and moulds is discussed. The three theories of the cytology of bacteria are described. Some authors believe in the primitive organization of bacterium as a cell devoid of a nucleus; others consider the construction of the bacterial cell as analogous to a typical cell, possessing nucleus and cytoplasm; others again postulate the presence of a diffuse nucleus. Perusal of these pages impresses the reader with the difficulty of the subject and gives him an idea of the numerous pitfalls awaiting the unwary.

The cultivation of bacteria is dismissed in a half page of small print.

To the discussion of protozoa twenty pages are devoted. Perusal of these pages should incite the interest of the reader to learn more about these interesting organisms.

The part dealing with the physiology of micro-organisms comprises about one hundred and fifty pages. A vast array of facts and fancies has been gathered together and discussed in comparatively simple language. The selection of facts should have been carried out with more critical scrutiny. It would have added to the clearness of the book. In a book like the one under consideration a great number of disputed hypotheses should not be brought forward at length; the author should confine himself to the reiteration of proven facts.

The chapters dealing with applied agricultural microbiology in the third part are by far the best part of the book. In the microbiology of water and sewage the most important facts are discussed and the discussion on the microbiology of soil makes very interesting reading and shows clearly the paramount importance of scientific research in agriculture, where "returns" for money spent can be obtained in a comparatively short time. The fixation of the atmospheric nitrogen by plants and the root nodule formation are discussed in a clear and precise fashion.

The relation of bacteria to milk and other farm products is not neglected and much valuable information on the process of manufacture of vinegar is put forward.

The chapter on the microbial diseases of man and domestic animals is disappointing. Only one hundred and seventy-five pages are devoted to this important subject; the result is merely a collection of scrappy notes on nearly every known disease of man and animal. It would seem superfluous to discuss in such a short treatise the preparation of vaccines and serums, the control of infectious diseases, immunity and susceptibility and many other aspects of disease-producing agents which can only be dealt with scientifically on the broadest lines.

The illustrations are not of a high standard of excellence. The book on the whole is interesting and instructive and should impress the reader with the enormous amount of work accomplished in microbiology, the great economic importance of microbes in the household of Nature, in spite of their small size, and the difficulty of their study.

The Medical Journal of Australia

SATURDAY, APRIL 15, 1922.

The Country Hospital.

THE policy of the medical profession in the Commonwealth in regard to public hospitals has often been the subject of discussion in these columns. Tensely stated, it is that hospitals are places where the sick poor can receive efficient treatment, nursing care and maintenance free of cost. The medical profession in the past has undertaken to provide honorary service in public hospitals to persons of small means. This service has been willingly given and the privilege of being in a position to do so has been eagerly sought. It is not claimed that honorary service in hospitals is entirely disinterested, since it is quite patent that the physician or surgeon on the hospital acquires very valuable experience and if he utilizes his opportunity to advantage, he adds to his renown. But the fact remains that the condition under which medical practitioners are prepared to give time, knowledge and skill to patients in hospitals without direct reward is that those who can afford to pay for the same treatment elsewhere, shall be excluded from this benefit. There are indications that the whole question may be re-opened in the near future and that the attitude of the medical profession toward institutions to which rich and poor alike are admitted, may have to be reconsidered. This reconsideration would no doubt involve an inquiry into the honorary system. A labourer is worthy of his hire. If the basis of hospital administration is to be changed, the attitude of the medical profession toward the hospital will have to be revised. For the present, however, the policy, as enunciated in the year 1917 by the Federal Committee of the British Medical Association in Australia, holds good.

There is, however, a serious disparity between the theoretical acceptance of this policy and its application in institutions situated in small country towns. These institutions are often constituted for a wider purpose than the provision of medical and nursing

attendance on persons of small means. In many towns the community is too small to support a private and a public hospital and consequently the well-to-do would be penalized if the hospital doors were closed to them. Moreover, the hospital at times is so planned as to include a form of contract attendance on subscribers at their homes. The medical practitioner in some remote country towns in Queensland, New South Wales and other States is engaged by the residents to undertake certain professional duties, both within the small hospital and in the homes of the subscribers to the local fund, and is paid for these services. Or the local people may guarantee a minimum annual income to the doctor to tempt him to reside in the district. It must be admitted that in these circumstances the policy in regard to public hospitals has to be modified. Public interest must be paramount. The tendency exists, however, for the management of local hospitals in some small towns to take a very liberal view of the exigencies of country districts and to compel medical practitioners to act in contravention of the policy of the profession. It is claimed in certain instances that the better equipment of the only public hospital as compared with that of the private institution in the district renders it essential that anyone should gain admission to the former. Those who are in affluent circumstances, are required to pay for maintenance and treatment and the so-called honorary medical officers now claim the right to charge for their services rendered to these well-to-do patients. It is quite obvious that when the hospital question is reconsidered, each class of institution will have to be distinguished from the others. One policy for all hospitals can no longer be upheld.

Closely associated with these problems is that of the relationship between the medical officer and the managers of the hospital. It is obvious that the justification for any departure from the principle underlying the policy in regard to hospitals must be based on something more than expediency. The medical practitioner must render services of the utmost utility to the people in the district. His relations to the hospital must be governed by the medical needs of his patients. The hospital should be regarded merely as a convenience, as a place where facilities for carrying out treatment are pro-

vided. Since it has been established that third party intervention between patient and doctor is undesirable as a rule and is only tolerable when it forms the means of bringing the services of a medical practitioner within the reach of all sorts and conditions of men, the conditions of appointment to the position of medical officer of a local hospital should be carefully regulated. A movement is on foot to standardize these conditions in so far as they apply to country hospitals. It is held that the appointment of the medical practitioner should be safeguarded to prevent arbitrary dismissal without just cause for complaint. At present, many committees of management of small country hospitals seek to evade ordinary responsibilities by engaging the medical officer for short terms, such as one year. If it is the personal desire of the committee to get rid of a medical officer, the appointment is not renewed and the position thus become automatically vacant. There are many opportunities for abuse and unfortunately abuse is by no means uncommon. We understand that this matter will shortly engage the attention of the Federal Committee and an attempt will be made to devise some method of restricting the power of antagonism and arbitrary interference between the country hospital medical officer and his patients by autocratic committees. Stringent measures should be adopted to prevent the many acts of folly under which medical practitioners suffer.

THE MILK SUPPLY OF LARGE CITIES.

THERE is no more dangerous subject in hygiene than that concerned with the supply and distribution of milk in a large city. Those who advocate a particular method of control, start in the middle and end in the lap of a commercial concern aiming at a considerable profit. At times the question is examined from an hygienic point of view, but even in these circumstances there are pitfalls and traps into which the reformer frequently precipitates himself. One of the chief difficulties lies in the fact that the legislative definition of pure milk is opposed to the laws of Nature. The standard according to the pure food regulations in the majority of the States of the Commonwealth is artificial, the percentage of fats and solids not fats being laid down in such a manner that a substantial percentage of Australian cows ought to be prosecuted. It is, of course, necessary to guard against dilution of milk with water and against the abstraction of fats or other ingredients from milk. But it is not beyond the power of the analyst to detect adulteration or

tampering by direct tests. Given the natural product of the cow's mammary glands, the important points to determine are whether it is reasonably clean, by which is meant that the number of bacteria in each cubic centimetre does not exceed ten thousand, whether the number of coliform bacteria is so small that several cubic centimetres have to be used before their presence can be ascertained, whether the milk is free from pus and the glands are apparently healthy, whether the milk is free from tubercle bacilli and the cow is free from all ascertainable traces of tuberculosis, whether the consumer receives the milk within twenty-four hours of the milking and whether the milk on delivery is still sweet. If all these questions can be answered in the affirmative, the richness or poorness of the milk, or in other words the so-called pure food standard, is immaterial.

It has long been recognized that there is a considerable waste associated with unclean milk. Commercial firms or dairy proprietors have wilfully ignored this primary essential and have covered the results of their own slovenly methods by increasing the price of the milk. Clean, sweet milk cannot be obtained in our cities unless adequate means are provided for the safe transport of the milk. This means that the railway authorities must provide cold storage on all long-distance runs for milk traffic. Some very important and interesting studies have been carried out at the National Institute for Research in Dairying at Reading, England, bearing on the question of the effect of clean methods in the milking shed. Dr. R. Stenhouse Williams publishes the results of these studies.¹ The inquiry was instituted in 1916, when the price of milk was lower than it is to-day. In one district it was found that there was an annual loss of over half a million pounds sterling through premature souring, splashing, irregularity of supply and the need for sterilization, while the total value of the milk in the year stood at £4,500,000. Souring represented a loss of 1%. In order to ascertain how far this immense annual loss in the industry might be obviated, a comparison was made between the cleanest commercial milk obtainable and the average commercial milk. Bacteriological tests were conducted daily for a period of two years. It was found that samples of clean milk, examined when twenty-four hours old, contained less than ten thousand bacteria per cubic centimetre on all occasions save three. On ten occasions coliform organisms were grown when one cubic centimetre or less of milk was added to lactose-peptone water. This very satisfactory result was obtained by the employment of trained, conscientious milkers, who worked in a special milking shed and had the advantage of an ample water supply and good light. The utensils were sterilized by steam after thorough washing. The milk was subjected to cooling at the farm immediately after the milking.

The average milk was examined between nine and twelve hours after the milking. The bacterial counts varied from day to day and were highly unsatisfactory. Coliform organisms were grown from one cubic centimetre or less from 64% of the

¹ *The Lancet*, December 31, 1921.

samples tested. A comparison was made by keeping fifty-one samples of the clean milk and forty-nine samples of the average milk for 1.75 days at laboratory temperature. All the clean milk samples remained sweet, while twenty-five of the forty-nine average samples were sour before the end of the test. The importance of employing closed buckets was also demonstrated. An exhaustive investigation into the state of cleanliness of the churns when returned to the farmer was carried out. This revealed a most disquieting state of affairs. Only 16% of the churns were returned in a dry and clean state. A further 28% were wet, but clean. One-quarter of all the churns smelt badly, while the remaining 31% had either not been washed at all or had been insufficiently washed.

Milk that will keep sweet under the climatic conditions of England for 6.2 days during the winter and for 3.3 days during summer time may be regarded as good milk. Such milk can only be obtained when the cows are clean and properly handled, when the milking is carried out by competent and conscientious persons in special sheds into covered buckets, when the milk is cooled in the farm and during transit and when the utensils are clean and kept clean. The dairy must be provided with an ample water supply and a steam service. The extra cost entailed will be saved by the limitation of the loss on spoiled and spilled milk.

CARBON TETRACHLORIDE IN HOOKWORM DISEASE.

ONE of the reasons why Mr. John D. Rockefeller selected hookworm disease as the chief target of the International Health Board was that it was a widespread intestinal infection which could be detected with certainty and ease by persons trained in microscopy and which could be cured in the vast majority of instances. The experience of all workers on this subject in the different parts of the world has been that a large proportion of sufferers can be freed of hookworms, whether they be *Necator americanus* or *Anchyllostoma duodenale*, but that about 10% resist treatment for a considerable time. It is probable that the infestation occurs at times in a form that defies cure by means that can be applied with safety to the patient. At all events the International Health Board workers have recognized that in every district there remains a residue of uncured patients after the second course of oil of chenopodium. The results with thymol have not been as good as those with oil of chenopodium. At the present time the plan of giving the oil of chenopodium, followed by a drastic purge, is accepted as the standard treatment of hookworm disease. In 1921, Dr. Maurice C. Hall, the Senior Zoologist of the United States Bureau of Animal Industry, published the results of some studies with carbon tetrachloride as an anthelmintic in dogs. His preliminary work led the medical officers of the International Health Board to institute some cautious experiments in man. We understand that this drug is being tried in Fiji and that its use in Australia is under consideration.

Dr. Hall has recently given further information

concerning his experiments on dogs.¹ He found that 0.3 cubic centimetre of the drug for every kilogram of live body weight sufficed to expel all the worms without any subsequent purgative. Thus, in a dog weighing ten kilograms he gave three cubic centimetres of carbon tetrachloride. He points out that he has not been able to achieve this complete result with any other anthelmintic. He was also able to expel all the hookworms by giving a mixture of carbon tetrachloride and thymol in doses of one cubic centimetre of the former and sixty-five centigrammes of the latter, or by giving three cubic centimetres of carbon tetrachloride together with one cubic centimetre of oil of chenopodium. The carbon tetrachloride was also useful in removing ascarids. The efficacy of the drug was also tested in swine and horses. It appears that good results were obtained against strongyles and that it was useful in ascarid infestations. In the next place, he made a number of observations concerning the safety of carbon tetrachloride in therapeutic doses.

Relatively little is known concerning the toxicology of this drug. As long ago as 1867 it was tried as an anaesthetic by Protheroe Smith, Sanson and Simpson. These observers recorded that carbon tetrachloride was useful for light anaesthesia, but that it was dangerous when a deep anaesthesia was induced. They held that it affected the action of the heart. Heusler in 1891 questioned the correctness of this view, since he showed experimentally that carbon tetrachloride induced a narcosis which frequently terminated in death from respiratory failure. It has not been employed therapeutically for other purposes and consequently little information has been published concerning its action when taken internally. As it is used in large quantities commercially, it is noteworthy to find that few accidents have been traced to either inhalation of the vapour or swallowing of the liquid. A few fatal instances have been reported after inhalation. It appears, however, that accidents have occurred when the substance was impure. Commercial carbon tetrachloride at times contains carbonyl chloride. Dr. Hall has given dogs as much as 1.5 cubic centimetres of the pure drug per kilogram of body weight without producing any ascertainable changes in the liver. One dog received one cubic centimetre per kilogram of body weight and was kept alive for eight months. No signs of a toxic effect were detected during life. The dog was killed and no changes of any kind were discovered. He had also endeavoured to ascertain whether the drug produces any subjective disturbances. He took three cubic centimetres after his usual breakfast. He smoked as usual during the day and did not restrict his activity. No symptoms were noted. Monkeys were given large doses up to fifteen cubic centimetres without the appearance of any symptoms other than a short-lived loss of appetite. The drug is cheap and easily obtained. It exercises no effect on unstripped muscular tissue and is therefore superior to the oil of chenopodium or thymol. This report is encouraging. It is evident that carbon tetrachloride should be given a trial in man to test its action as an anthelmintic in hookworm disease.

¹ *The Journal of the American Medical Association*, November 19, 1921.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Sclerectomy and Iridencleisis for Chronic Glaucoma.

S. HOLTH (*British Journal of Ophthalmology*, December, 1921) forms a sub-conjunctival tunnel before making the limbal keratome incision in sclerectomy for chronic glaucoma. If an iridectomy has previously been performed, the periphery of the iris at one border of the coloboma is drawn a little into the sub-conjunctival wound at one angle of the keratome incision. Where no iridectomy has been done, the iris is seized at the margin of the pupil and drawn out beyond the limbal incision, the assistant drawing down the conjunctiva by a blunt double hook. A meridional iridotomy is then made, including the sphincter. This procedure is suitable also for blind, painful eyes instead of enucleation. The author claims that the iris tissue imbedded in the limbal wound produces a fistulous opening lined with pigment epithelium, bringing the anterior chamber into communication with the sub-conjunctival tissue. He has had no late infection in 127 operations. The author conceived the idea that a more peripheral sclerectomy fistula would be better protected against late infection than one close to the limbus. By putting the one-millimetre blade of his new punch forceps into the anterior chamber in tangential direction from a short incision 1.5 or 2 millimetres from the limbus, an extra-limbial excision could be obtained. A large curved conjunctival flap is dissected downwards; the sclera excised should be three millimetres long. In primary acute glaucoma he prefers the classical iridectomy.

The Retinal Pulse.

R. H. ELLIOT (*British Journal of Ophthalmology*, November, 1921) publishes the results of his investigation on the nervous and arterial pulsation in the human retina. The arterial retinal pulse is seen when the intra-ocular pressure is greater than the pressure in the arteries during the period of diastole, but less than the pressure in the arteries during systole. It is a pathological phenomenon indicating that the circulation through the eye is being maintained only during part of the cardiac cycle. It is called the "diastolic pulse." It can be seen if the eye is examined with the ophthalmoscope and pressure made on the globe by the finger. As the digital pressure increases, the period when the artery is filled gets shorter and the empty phase longer, until the pulse disappears at the point when the intra-ocular pressure has been raised above the maximum or systolic pressure in the retinal artery. The latter part of this experiment is not free from risk to the patient and is not recommended. The venous pulse

varies considerably in volume and is best seen on the disc or when making a bend during its course. When under digital pressure a diastolic arterial pulse is produced side by side with a venous pulse, they will be seen to alternate; the vein fills as the artery empties. To understand these phenomena the author gives an exposition with a diagram of the cardiac cycle. This cycle occupies 0.8 second; each tenth second and what happens therein is graphically represented. For 0.4 second the blood is entering the auricles and ventricles from the veins; in the next tenth, the fifth, occurs the systole of the auricles; in the next 0.3 second the systole of the ventricle occurs. For one-third of the sixth tenth second the aortic valves are still closed. Cardiac diastole occupies four tenths and cardiac systole the same time. But diastolic pressure in the eye occupies five and a fraction of the sixth tenth second, seeing that auricular systole (the fifth tenth) and the short period while the aortic valves are still closed have no effect on the circulation. Similarly, ocular systole occupies only two tenths and portion of a third tenth. Studying the diagram, it is obvious that venous pressure is increasing in the first four tenths, rises suddenly in the fifth and falls in the sixth. Arterial pressure is falling in the first five tenths and part of the sixth and rises rapidly in the latter part of the sixth and seventh tenths. Hence the venous retinal pulse occupies the period from the fifth to the seventh tenth, namely, from the point of the maximum venous pressure to the minimum. The diastolic arterial pulse occurs when intra-ocular arterial pressure is at its lowest, namely, during the fifth tenth.

Ocular Changes in Infantile Scurvy.

E. M. BLAKE (*American Journal of Ophthalmology*, October, 1921) advises his confrères to be cognizant of the ocular changes in infantile scurvy as the ophthalmologist may be consulted before the diagnosis of scurvy is made. The symptoms of the disease, frequently called Barlow's disease, are spongy gums, swellings and ecchymoses about the joints, especially the knee and ankle, haemorrhages from the nose, hyperesthesia and pseudoparalysis of the lower limbs and anaemia. The most frequent and striking ocular complication is exophthalmos due to orbital haemorrhage. He finds that it occurred forty-nine times among 379 patients suffering from scurvy. It may be very slight or extremely marked; it may be an early sign or a late manifestation. It occurs suddenly sometimes after a fit of crying and may be present in one or in both eyes. The proptosis is due either to a haemorrhage in the areolar tissue of the orbit or haemorrhage beneath the periosteum of one of the orbital bones. Other symptoms less frequently noted are ecchymoses of the lids, sub-conjunctival haemorrhage and hyphæmia. A suddenly appearing exophthalmos in an infant is probably due to scurvy and the same

applies to sub-conjunctival haemorrhage in an infant not suffering from pertussis.

Massage of the Eyeball.

H. V. WURDEMANN (*North-West Medicine*, December, 1921) recommends deep digital massage for embolism of the central retinal artery if seen a few hours or days following the onset. He relates the history of a patient whose vision was restored by this means. For posterior synechia after iritis he finds mechanical massage an improvement over the digital method. He employs a rubber cup massage handle, which receives its power from the Victor transformer No. 2 and the Pynchon pump attachment. The best results are obtained with 50 to 150 vibrations to the minute. Suction and release, pulling the eye in and out of its socket as far as can be, give the best results. This is carried out for half a minute and the eye examined; if there is no hyphæmia it is repeated. In partial primary atrophy of the optic nerve or in that following papillitis, some improvement may be expected from massage continued for at least a year. The author believes that massage is worth trying in *retinitis pigmentosa*.

Eye Symptoms in Osteo-Myelitis of the Superior Maxilla in Infants.

E. MARX (*British Journal of Ophthalmology*, January, 1922) discusses the records of thirty-five cases of osteo-myelitis of the maxilla, also known as acute sinusitis of the antrum of Highmore in newly born infants, with special reference to the ocular symptoms. He has seen this condition only three times. The organism concerned is generally the pneumococcus or streptococcus; but the mode of entrance is uncertain. The spongiosa of the maxilla is invaded; then follow a flow of blood to the part, discharge and finally necrosis and sequestrum formation. The condition ends fatally in 25% of patients. Usually swelling of the eyelids appears at an early stage; often a fistula forms in the region of the lachrymal sac and conjunctivitis and exophthalmos result. There is also a discharge from the nose and canine fossa. Sometimes the oculist is the first to be consulted. Exophthalmos indicates that the ethmoids may also be involved.

Keratitis from Sugar Ingestion.

A. C. MACLEISH (*American Journal of Ophthalmology*, October, 1921) reports the case of a girl of three years who suffered for a year with recurrent attacks of inflammation, pain, photophobia and lachrymation of both eyes. In both corneaæ there was a diffuse interstitial keratitis. The child was pallid and emaciated. Her blood serum did not yield a Wassermann reaction. Anti-syphilitic treatment produced no benefit. It was found that the child was inordinately fond of sweets and ate a large quantity of sugar daily. There was no glycosuria. After two weeks of abstention from sugar the improvement was extra-

ordinary; the photophobia and lachrymation were gone and the cornea much clearer; her general condition, too, was much better. A month later the improvement was still more marked. About a year later the child had a temporary recurrence when she indulged in sugar during her mother's absence.

LARYNGOLOGY AND OTOTOLOGY.

Peroral Endoscopy.

CHEVALIER JACKSON (*Journal of Laryngology and Otology*, November, 1921) states that the majority of foreign bodies in upper air passages occur in children. The ease with which the larynx of a child can be directly examined without anaesthesia and the necessity of its being done in cases of hoarseness and dyspnoea is emphasized. All new instruments should be tested on the rubber tube, then on the cadaver, next on a living dog and finally on an adult patient before its use is attempted on a child. A careful physical examination should be made, even when the foreign body is clearly visible in the skiagram. The recovery of a small foreign body from a small bronchus well out towards the periphery of the lung is not necessarily facilitated by a tracheotomy, as the latter does not permit of the use of a larger tube than when the peroral route is taken. A tube too large to go through the larynx will not enter either main bronchus. He quotes McCrae to the effect that the presence of a foreign body in a bronchus is more common than has been supposed, that there may be no disturbance at the time of entrance of the foreign body and no suggestion in the history of such a happening. There may be decreased expansion on the affected side, very fine râles and the "asthmatoïd wheeze." Some foreign bodies, such as a peanut, set up a very acute general process which is distinctive. Metallic objects may cause permanent changes, usually in a lower lobe. In the early stages and in the acute cases pneumonia may be wrongly diagnosed and after the foreign body has been present for some time tuberculosis.

Pollinosis.

W. C. WILLIAMS (*The Military Surgeon*, October, 1921) holds that the anaphylactic or allergic conception of hay fever is the basis of the present specific method of its treatment, i.e., by desensitization. The process is theoretically an exhaustion or saturation of the protein-splitting enzyme and is carried out by repeated small and increasing doses of the specific protein until the organism is capable of withstanding the ordinary amount of air-borne pollen. To determine the specific pollen to which the patient may be sensitive, a drop of concentrated pollen extract is placed on a slight abrasion of the skin and on a control abrasion is placed a drop of the pollen solvent, usually 16% alcohol in physiological salt solution. The reactions develop in from ten to ninety

minutes, consisting of an urticarial wheal with more or less hyperæmia extending some distance about it. Desensitization is generally carried out with an extract of the pollen giving the strongest reaction. The initial dose is 0.1 cubic centimetre of a 1 to 10,000 dilution of the pollen and this is followed at five days' intervals by gradually increasing doses until the patient receives 0.4 cubic centimetre of a 1 to 500 dilution. A skin test should be made before every inoculation and if a reaction occurs, the next higher dilution should be used in order that no reaction may appear. No injection should be given if the patient does not feel quite well and he should be kept under observation for half an hour after the injection. Adrenalin should be available for immediate use at all times.

Posterior Ethmoid Exploration.

PATRICK AND ERIC WATSON-WILLIAMS (*Journal of Laryngology and Otology*, October, 1921) describe the technique of a method for the diagnostic exploration of the posterior ethmoid cells. The nose is cleansed and sprayed with a 20% solution of cocaine. The patient lies supine and a frontal sinus cotton-wool-carrier dipped in solid cocaine hydrochlorate crystals is carried well up and back into the middle or superior meatus according to the route chosen. In from three or four minutes a sphenoidal sinus blunt trocar and cannula are passed by the route selected (usually the middle meatus), with the top of the meatus between the bulla and the middle turbinate or through the bulla until the point rests on the superior oblique attachment of the middle turbinate. Just before puncturing the instrument is raised into a more horizontal position and is made to take a more outward direction. The instrument is then pressed gently through the anterior wall of the posterior ethmoidal cell, just outside the thicker bone corresponding to the attachment of the middle turbinate. The trochar is now withdrawn and a suction syringe, containing about three cubic centimetres of sterile distilled water, attached. The cell is filled and emptied several times and then the contents are withdrawn and examined macroscopically. They are then transferred to a sterile bottle for a microscopic and cultural examination. A little colloidal silver or mercury biniiodide solution (1 in 10,000) may then be injected and left in the cell.

Bismuth-Iodoform Paste in Acute Mastoiditis.

F. HOLT DIGGLE AND F. B. GILHESPY (*Journal of Laryngology and Otology*, October, 1921) report the results following mastoidectomy combined with the application of bismuth-iodoform-paraffin paste and primary suture in twenty patients. They affirm that their series proves that the process of healing is shortened by this method. They advocate placing the skin incision as near the hair line as possible and a complete exposure of all infected mastoid cells. The wound is washed

out with one in twenty carbolic lotion, syringed with methylated spirit and dried. The tip of the index finger is lightly covered with bismuth-iodoform paste, which is rubbed into the bony cavity and soft parts. The incision is sewn up with closely placed interrupted silkworm-gut sutures. The meatus should be disinfected and the tympanic membrane incised if drainage through the perforation is insufficient. The paste was not found to affect the hearing adversely.

Diathermy for Throat Tumours.

WILLIAM MILLIGAN (*Journal of Laryngology and Otology*, August, 1921) recommends diathermy in inoperable malignant disease of the mouth, tongue, palate, tonsillar area and epilaryngeal region. It improves the local condition, relieves symptoms and promotes the patient's feeling of well-being. A preliminary tracheotomy should be performed when the growth is in the neighbourhood of the larynx and large vessels passing near a growth should be ligatured, in order to avoid secondary haemorrhage after coagulation of the neoplastic tissue. He recommends several sittings of short duration. For medium-sized growths, 800 to 900 milli-ampères are sufficient, but one to two ampères are necessary for larger tumours. The current should be gradually increased in strength from zero. Orthoform in 20% strength is useful for relieving the pain, which often accompanies the separation of the sloughs from about the eighth to the twelfth day.

Operative Treatment of Ozæna.

MAX HALLE (*Journal of Laryngology and Otology*, December, 1921) reports brilliant results in the treatment of at least forty-four cases of ozæna by elevating the nasal floor and advancing the lateral nasal wall toward the middle line, in which position it is retained by firmly packing the antrum for some days. He had in the early stage of the operation scarified the medial side of the inferior turbinate and the portion of the septum opposite it. He does not remove the antral mucosa if it appears normal and claims that no advantage is obtained from following Lautenschläger's technique of inverting Stenson's duct into the antrum.

Paraffin and Wax.

T. M. STAHLMAN (*Pennsylvania Medical Journal*, September, 1921) has employed a mixture of paraffin and beeswax to facilitate the removal of dressings, to keep separate two raw surfaces, to maintain an opening, to produce absorption by pressure and to carry medicinal agents. The preparation is "extra tough pink paraffin and wax" in sheets 7.5 centimetres \times 15 centimetres \times 1.56 millimetres. It has a pleasant odour and is readily sterilized by bringing it to boiling point. It can be moulded into plugs and splints of any shape or size. It is non-irritating and does not become a medium for bacterial growths.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Queensland Branch was held at the B.M.A. Rooms, Adelaide Street, Brisbane, on February 3, 1922, DR. G. P. DIXON, C.B.E., the President, in the chair.

Aspects of Insanity.

DR. J. E. F. McDONALD submitted a paper entitled "Some Aspects of Insanity." The paper was read by DR. S. F. McDONALD, as the author was unavoidably absent (see page 399).

DR. A. GRAHAM BUTLER, D.S.O., said that he was of opinion that the magnitude and the importance of the subject was not realized by the public nor by the majority of medical practitioners. The fact that the diseased in mind were promptly removed from the community and segregated at a distance tended to weaken the interest of both the public and the medical profession in the social significance and scientific aspects of insanity.

He was not greatly concerned with the matter of certificates. He regarded certification simply as an administrative procedure. It seemed to him that the important aspect of the question was what could be done to prevent and to treat insanity. This involved as a necessary preliminary the pathological meaning and the basis of insanity. He would regard the diseases of the organ of mind as diseases of other organs of the body were regarded. They should be accurately diagnosed and etiologically appraised. They should be adequately and systematically dealt with as regards prevention and treatment, not necessarily nor exclusively in asylums. He regarded insanity as a manifestation of a number of diseases and he found it difficult to consider certification without reference to the particular disease giving rise to the symptoms. The medical aspect of insanity was overshadowed by the legal. The lack of agreement so often manifested in this connexion was a measure of the difficulty of defining the undefinable. Measures of prophylaxis, exact diagnosis, prognosis and early treatment should be the concern of the medical profession to a much greater extent than at present. In regard to prevention, the most important aspect of the question, he thought that no one who considered the matter on the lines of Professor Johnson's paper to Congress, could fail to feel that action of a definite kind was necessary. For his own part, he had a firm conviction of the urgent necessity for limitation of the propagation of the degenerate.

DR. S. F. McDONALD said that the most important point in dealing with persons suffering from mental affections was early diagnosis. From this early treatment followed naturally. Unfortunately, at present little was possible short of certification and admission to an asylum. It was this fact that kept many patients in the early stages of disease from seeking treatment. One of the first essentials of treatment was rest and change from the patient's ordinary environment. Many patients, especially those suffering from the manic-depressive type of insanity, failed to improve at least temporarily as a result of the application of the various forms of early treatment. Excellent work was being carried out in the mental ward at the Brisbane General Hospital, but the staff could not cope with all that it was called upon to do. Moreover, he considered that a ward at the general hospital was insufficient and that an out-patient department under the control of a practitioner with knowledge of mental diseases was an essential. Dr. McDonald recommended those interested in the modern theories of mental disease and especially of *dementia praecox* to study the works of Kraepelin, Mott, Jung and Freud. They would probably be as wise at the end as at the beginning of their study, for there seemed to be no agreement between any two authorities. Stoddart, however, would provide them with sound advice in dealing with actual patients.

DR. T. H. R. MATHEWSON congratulated Dr. McDonald on his interesting paper. The subject of mental disorder was apt to be regarded as something incomprehensible and the symptoms exhibited by the patient as mere fancies not to be taken seriously. The only way in which they were

likely to understand mental disorder, was by studying it as they would study other disease processes; that was by regarding the symptoms as reactions to stimuli inside or outside the body. Sir James Mackenzie had recently put forward the hypothesis that early symptoms of disease revealed themselves in a disturbance of the normal reflexes. This hypothesis involved a wider conception of what was ordinarily meant by the term reflex. According to this hypothesis, the body was regarded as a highly complex mechanism, the actions of which were co-ordinated and controlled by innumerable reflexes. In a state of health the reflexes were balanced. The symptoms of disease were signals of a disturbance of the balance somewhere in the organism. The body furnished an apparatus more sensitive than any laboratory instrument and the slightest deviation from a condition of health manifested itself in altered reflexes before the most delicate physical and chemical tests were applicable.

In order to understand the meaning of symptoms, it was essential that there should be an accurate knowledge, not only of the structures and functions concerned, but also of the manner in which these structures behaved and these functions altered under varying conditions. It was necessary to study the reaction of an individual to an environment. The variable and unintelligible symptoms of a neurotic patient became explicable when it was recognized that they represented the behaviour of an individual to an environment. Sir James Mackenzie had investigated the referred or reflex symptoms in nervous and mental disorders. Referred sensation was of considerable importance. For example, people who suffered from attacks of depression, often said that they seemed to arise from a "sick feeling in the pit of the stomach." This feeling subsided as the mental condition improved. Treatment directed to the correction of a disorder of the stomach had no influence on the sensation. Cannon's researches provided conclusive evidence of bodily changes brought about in response to affective mental processes. A referred symptom might be regarded as an indicator of an imbalance somewhere in the system. It was interesting to observe that almost every person had his own particular symptom of imbalance. One would complain of a headache, another of a backache and so forth. They were apt to look for the cause of a symptom, such as pain in the region of the body in which it occurred, although the symptom might have a mental origin. Dr. Mathewson stated that he was not prepared to maintain that the causes which they vaguely called mental or psychological, might not ultimately be capable of expression in physiological language. When dealing with a patient who exhibited delusions, obsessions or fears, they should investigate these symptoms in order to determine the underlying cause. Symonds, of Guy's Hospital, had stated that in the analysis of every problem of behaviour there were two groups of factors to be considered, the personal and the environmental. They would have to ask themselves: "What stuff is this man made of?" and "What is the situation he has to face?" They would have to inquire concerning his inheritance, the manner of his upbringing and how he had reacted to it, whether he had been shy or open as a child. They would have to ascertain how he had reacted to the development of the sexual impulse, with its train of conflict between the instinctive forces of the individual life and the laws of right and wrong which were recognized instinctively by every member of society. They would have to discover whether he met the need when the time came for him to make a path in life for himself. Finally, they would have to discover how the patient faced those problems which were peculiar to his own life. By these means they were enabled to obtain a certain measure of the personality of the patient. They would then have to turn to the circumstances of his life at the time when his illness began and to find out the things that really mattered to him at that time. In this way they would be able eventually to sum up the mental condition in terms of reaction of a particular individual to a particular situation and to classify the patient and his affection according to the type of reaction observed.

During a discussion at the Annual Meeting of the British Medical Association in 1921 on the diagnosis and treatment of so-called border-line mental affections, Robertson had emphasized two facts which had become prominent within recent times. The first was that no hard-and-fast

boundary line existed. Neuroses and psychoses gradually merged from one into the other. The second was that the intermediate zone, the so-called borderland, was not a narrow strip of territory, but an extensive domain which, from the influence it exercised on human life, was a very important one. Dr. Mathewson quoted extensively from Robertson's paper.

He ventured to challenge the advisability of accepting the present-day symptomatic nomenclature and classification. In the latter part of the last century Kraepelin had endeavoured to apply modern scientific methods to the study of mental disease. He had presumed that these diseases were as much specific entities as were diseases of the lung or liver. He sought to base his classification with due consideration for the aetiology, the pathological anatomy, the symptomatology and the prognosis. Those disturbances of mental processes in relation to which a definite pathological picture could be found, such as general paralysis of the insane and cerebral arterio-sclerosis, had already been firmly established on such a basis. In endeavouring to extend this method he had utilized his accurate observations and his careful analyses. His research, however, had become limited to symptomatology and diagnosis. He had found, as others had found before him, that there were no distinctive pictures in the brain when examined by the naked eye or under the microscope, by which they could correlate the pathological changes with groups of symptoms. Investigations in connexion with aetiology were not more fruitful. A comparatively small number of psychoses could be associated with infective processes or poisons, such as alcohol. The majority, however, could not be assigned to such causes. He had achieved a most exhaustive analysis of the symptoms manifested by patients under his observation and had been able to correlate these symptoms with the prognosis. His classification of the psychoses according to their symptoms was thus established.

Dr. Mathewson gave notice that he would propose the following motions at the next meeting of the Branch:

That at the Brisbane General Hospital an outpatient's department be established for the investigation and treatment of psycho-neurotic and border-line mental conditions.

That a special hospital be established in the vicinity of Brisbane for the treatment in the early stages (without certification) of psycho-neurotic and border-line mental conditions.

A MEETING of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association was held in the Medical Society Hall, East Melbourne, on December 8, 1921.

Plague.

DR. R. W. HORNABROOK read a paper entitled "Plague Experiences" (see page 408).

DR. NEIL HAMILTON FAIRLEY stated that he wished to discuss the pathological side of the disease and based his remarks on his experience of plague in India. There were two modes of infection. In the ordinary form the infection arose as a result of an epizootic among rats, both wild and domestic; the second factor was the carriage of infection by the rat flea. The fleas concerned in the conveyance of plague infection were *Pulex cheopis* and *Ceratophyllus fasciatus*. The former was common in the tropics and the latter in temperate climates. Martin and Bacot had shown that fleas feeding on infected rats suffered from gastric obstruction and vomited the ingested organisms on to the skin of the patient. The organisms penetrated the skin through the bite of a flea.

The mode of infection in the pneumonic type was direct. The secretions of the bronchioles containing plague bacilli were disseminated by coughing.

Dr. Fairley pointed out that the lymphatic glands of the maxilla, groin and neck and the drainage areas of these glands had been found at each corresponding examination to be affected. There was peri-adenitis with oedema and haemorrhage on section of the bubo. Cloudy swelling and focal necrosis was seen in the spleen, liver and kidneys. There were haemorrhages in the serous membranes and in the skin. He pointed out that plague manifested two

characteristics. In the first place there was its invasive ness or tendency to become septicæmic. In the second place there was its toxicity. Endo- and exo-toxins were produced by the *Bacillus pestis*. The bacillus was a bipolar, Gram-negative, easily cultured organism, growing in stalactite forms on broth. It was distributed in the body, in the glands, blood and various organs. It was found in the excreta, the urine and faeces.

The laboratory diagnosis was made from the result of gland culture, or cultures from the blood and of the agglutination tests. The gland culture was carried out by inserting a needle into the bubo and aspirating the fluid. The fluid was inoculated into broth and into a guinea-pig. In connexion with blood cultures it had been found to be necessary to use large quantities of broth to dilute the antibodies in the blood. An agglutination in a dilution of one in ten sufficed for the diagnosis.

Dr. Fairley stated that he had had clinical experience of bubonic and septicæmic plague in Egyptian hospitals, but not of the pneumonic type. In the bubonic form the onset was usually sudden, with a rigor, headache, backache and acceleration of the pulse. The patient became restless and prostration followed rapidly. The femoral bubo appeared on the second day. It was tender and the swelling was extensive. The spleen became palpable. A leucocytosis appeared. Bacilli were recovered from the glands. In some cases the glands suppurred about the tenth day. Drainage was usually followed by recovery. At times nervous symptoms were prominent and the patient lapsed into a typhoid condition. The mortality was about 70%. Death usually took place on the third or fourth day. Cardiac failure was common. A favourable prognosis could usually be given if the patient lasted for five days. In the septicæmic cases death often took place on the second day.

In dealing with the diagnosis Dr. Fairley pointed out that in the pneumonic form the patient expectorated a serous, watery, sanguineous sputum containing plague bacilli. The differential diagnosis of bubonic plague had to be made from filariasis, tropical bubo, suppurative soft sore and various pyogenic conditions.

Haffkine's vaccine, which was a six weeks' culture in broth, was used with success as a prophylactic. The dose usually given was four cubic centimetres of the standard emulsion. The treatment of the septicæmic form consisted in careful nursing, intravenous injections of vaccines, the intravenous injections of Yersin's serum in large doses and the application of antiseptics, such as iodine (six cubic centimetres of the tincture to a litre) or eusol. The great danger of the serum treatment lay in heart failure from its too rapid injections. Dr. Fairley emphasized a necessity for slow administration. The local treatment of the bubo resolved itself into the application of ice, of fomentations and of glycerine and belladonna. For the nervous symptoms bromides, hyoscine and morphine were given.

DR. EFFIE STILLWELL referred to her limited experience of plague in Patna. She hoped that they would never experience in Australia the devastation and consequent loss of labour produced by a severe epidemic. She referred to the history of a European with plague to illustrate the difficulty of excluding infection. She also spoke of the occurrence of prolonged cardiac weakness in a patient who had ultimately recovered. Towards the end of an epidemic the infections frequently tended to become very mild. As evidence of the value of prophylactic inoculation, she stated that it was being sought voluntarily by the uneducated folk who formerly feared it as an evil plan to kill them.

DR. T. W. SINCLAIR related his experience of plague in Australia. He stated that it was highly important to recognize that the epizootic form of plague among rats was an essential feature in an epidemic. It was also necessary to recognize the flea as an efficient intermediary between man and rat. Hence there was the necessity of rendering premises rat-proof and of improving the construction of buildings.

The history of the person himself was of first importance in the diagnosis of the condition. If an individual had not been exposed either at the place where he worked or at his home to risk of infection from rodents, it was improbable that the disease from which he was suffering was plague.

Dr. Sinclair stated that the onset of the disease was usually sudden. The first symptom was often a rigor or shivering. This was followed by headache and was at times accompanied by giddiness, nausea or even vomiting. Occasionally the onset was gradual and the first symptoms were lassitude and general pains about the body, especially in the loins and back. The degree of fever varied considerably. It was at times as high as 39.5° C. to 40° C. The pulse-rate was increased, often up to 120 per minute. It was usually a soft, dicrotic or a soft, "sloppy" pulse. Pain might appear in the infected glands, either before or at the same time as the constitutional symptoms were noted. At times the glands were so exquisitely tender that it was impossible to insert a hypodermic needle into them. Slight enlargement appeared at an early stage. There was no redness of the skin in the septicæmic type. The bubo might be absent or it might be obscured by the diffuse peri-adenitis. The onset was sudden, with giddiness, vomiting, headache and a rapid rise of temperature to 40° C. As the illness progressed, the face became flushed and the patient, after being mentally dull, passed into a state of coma. The pulse was usually rapid and dicrotic. It was unusual to isolate the bacilli from the peripheral blood until late in the disease. Death usually occurred in the course of a few days. The differential diagnosis had to be made from the pneumonic form, from typhus, from enteric fever and from malaria.

The pneumonic form set in suddenly, with an accompanying rigor. The temperature rose to about 39.5° C. and the pulse-rate became accelerated. The respiratory rate gradually increased. The signs on the lung were of the broncho-pneumonic type. In one patient he had experienced great difficulty in obtaining any expectoration. The smallest amount of sputum usually sufficed for the recognition of *Bacillus pestis*.

As a rule, there were no signs of local inoculation. In one instance he had been able to detect a pustule over the right sterno-clavicular joint. This patient had a bubo in the epi-trochlear gland on the left side. At times flea bites were seen on the skin. Persons suspected of plague had been found to be suffering from pneumonia, enteric fever, septicæmia, *erythema nodosum* and glandular enlargement.

The treatment consisted in the administration of Yersin's serum and general symptomatic measures. It was essential to isolate patients suffering from the pneumonic form and those who had been in contact with them. Dr. Sinclair stated that this form was relatively uncommon in Australia, was easily managed and did not usually lead to a large series of infections. This had been his experience during the previous outbreak in Sydney.

Vaccine used prophylactically had been of great value in India. Bags containing hypodermic needles, capillary tubes, agar culture tubes, serum and a serum syringe were distributed to the medical officers visiting patients who were reported to be suffering from plague. Precautions, such as flea-proof clothing, were not deemed necessary, as the chances of infection were regarded as being less in the patient's home than at the place of his work in connexion with the bubonic and septicæmic types. The use of vaccine as a protective measure was indicated in those exposed to danger, such as the members of the cleansing and rat gangs, nurses and others who came in contact with patients. After having visited a person suffering from pneumonic plague, he had had an injection of Yersin's serum.

DR. HAROLD DEW described some of the sporadic cases he had seen among the natives of Egypt. One patient who had septicæmic plague died in two days. There were no buboes, but at the *post mortem* examination their attention had been drawn to the condition by the presence of a haemorrhagic effusion and an enlarged spleen. A smear from the spleen contained *Bacillus pestis*. Dr. Dew exhibited the smear. He referred to *Bacillus pseudo-pestis*, which could readily be mistaken in spleen smears for the true *Bacillus pestis*. Cultural or inoculation methods were necessary to distinguish this harmless saprophyte from the plague germ. In typical bubonic plague the patient complained of aches and pains during a vague period of invasion. The condition was often confused with relapsing fever or typhus fever, both of which were common diseases in Egypt. The patients suddenly became worse; rigors appeared, the tongue became brown and dry, the appear-

ance became haggard and the spleen enlarged. All the patients showed signs of a severe toxæmia. The buboes appeared within thirty-six hours, as a rule, although in the only patient who recovered, they were not noted until the fourth day. The patients who died, became delirious and maniacal. Drowsiness supervened and death occurred as a rule on the fifth or sixth day. The mortality was over 90%. At autopsy toxic changes in the spleen and liver, ecchymoses, blood-stained effusions and enlarged glands were noted. The diagnosis had not been made in any case before enlargement of the glands had appeared and a diagnostic puncture had been carried out. The cultures were made on Haffkine's medium and on 4% salt agar. The treatment adopted consisted of hydro-therapy, the exhibition of morphine to combat the pain and restlessness, the application of plasteine to the buboes and incision when necessary. Dr. Dew stated that he had had no experience of Yersin's serum, but the Indian authorities he had met were enthusiastic concerning its use in large quantities. In regard to prophylaxis, isolation for eight days was the rule. Flea-proof garments should be worn, antiseptics should be used on the floors and all animals should be excluded.

MEDICO-POLITICAL.

AN extraordinary meeting of the New South Wales Branch of the British Medical Association was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on March 31, 1922, DR. T. W. LIPSCOMB, the President, in the chair.

Standing Orders.

DR. W. F. LITCHFIELD presented on behalf of the Council standing orders for the regulation of scientific meetings and for the conduct of meetings other than scientific meetings. The suggestion that rules should be drafted had emanated from Dr. McClelland. The Council had given the draft rules very careful consideration and commended them to the meeting. Dr. Litchfield moved that the standing orders be adopted.

The motion was seconded by DR. R. H. Todd and carried without debate.

Advertisement in Newspapers.

DR. R. H. Todd, the Honorary Secretary, moved on behalf of the Council:

That the following be added to the Regulations:
"Advertisement in Newspapers," viz.: "That advertisements of change of address, commencement or resumption of practice by members in the metropolitan area shall be limited to the Sydney morning 'dailies.'"

He explained that the matter had been considered by all the local medical associations in the suburban districts of Sydney and that it had received approval from all. Many of the suburban newspapers appeared at long intervals and the advertisements in them were not under control. These announcements were the only advertisements which a member was permitted to make. Dr. Todd recalled to the minds of the members that the proposal had been carried at the last meeting of the delegates of the local medical associations with the Council of the Branch.

The motion was seconded by DR. H. A. C. WALL and was carried.

NOTICES.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch. The Scientific Committee reserves to itself the right to modify the arrangements, but it is hoped that no changes will be necessary.

May 3, 1922.

At the Walter and Eliza Hall Institute, Melbourne Hospital, at 8.30 p.m..

DR. E. H. DERRICK: "Renal Tumours."

DR. JULIAN SMITH: "Diagnosis of Renal Tumours."

DR. H. ALAN S. NEWTON: "Treatment of Renal Tumours."

June 7, 1922.

*At the Walter and Eliza Hall Institute, Melbourne Hospital,
at 8.15 p.m.*

DR. W. J. PENFOLD will demonstrate the action of pneumococci on aromatic amino bodies.

DR. W. J. PENFOLD: "Australian Pneumococci."

DR. S. W. PATTERSON: (a) "Prognosis in Pneumonia"; (b) "Clinical Application of Serum Treatment of Pneumonia."

DR. R. L. FORSYTH will open the discussion on the serum treatment of pneumonia from clinical experience at the Children's Hospital. Papers will be illustrated by lantern slides.

At a meeting of the Council of the Paediatric Section of the New South Wales Branch of the British Medical Association, held on February 20, 1922, it was resolved that the first meeting of the Section should be held on April 21, 1922, at 8.15 p.m. in the Library in the B.M.A. Building. We recommend all those who are interested in children's work, to join this Section and to take part in its deliberations. The annual fee is 5s. and all members of the New South Wales Branch are eligible for membership. The Honorary Secretary of the Section is DR. E. SELWYN HARRELLSON and his address is 195, Macquarie Street, Sydney.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

CHAPMAN, WILLIAM JAMES, M.B., Ch.M., 1921 (Univ. Sydney), The Crescent, Homebush.

HOLLAND, LLONDHA LLENOI, M.B., 1920, Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

HULL, WALTER JOHN, M.B., Mast. Surg., 1921 (Univ. Sydney), 97, Audley Street, Petersham.

ICETON, SYDNEY GEORGE, M.B., Mast. Surg., 1920 (Univ. Sydney), Newcastle Hospital.

THE undermentioned has been elected a member of the Victorian Branch of the British Medical Association:

HAYES, WILLIAM IVON, M.B. et Ch.B., 1917 (Univ. Melb.), Heidelberg.

THE undermentioned have been elected members of the Western Australian Branch of the British Medical Association:

GILLESPIE, LESLIE THOMSON, M.B., 1900, B.S., 1901 (Univ. Melb.), Perth.

WOODS, LESLIE SAMUEL, M.B., B.S., 1920 (Univ. Melb.), Children's Hospital, Perth.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

THE ANNUAL MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Melbourne, on March 8, 1922.

Annual Report.

DR. H. DOUGLAS STEPHENS, the Honorary Secretary, presented the Annual Report, in which was reviewed a very successful year's work. Nine meetings had been held, clinical, academic and pathological, all of which had been well attended and proved interesting and instructive.

Clinical evenings were devoted to the subjects of polyarthritis, splenomegaly and Hodgkin's disease; papers were presented on tonsillectomy, infant feeding and syphilis in children.

A review of the work of the Dermatological Clinic, preceded by an exhibition of patients with dermatological

lesions and a demonstration of pathological specimens, followed by a discussion of the utility of identifying the several types of pneumococci occupied two other meetings.

In the report the Committee expressed the indebtedness of the Society to PROFESSOR W. E. AGAR for an interesting lecture on heredity.

The two remaining meetings were devoted to the presentation of varied clinical cases and specimens.

Election of Office-Bearers.

The following gentlemen were elected to the several offices for the ensuing year:

President: DR. R. L. FORSYTH.

Honorary Treasurer: DR. F. HOBILL COLE.

Honorary Auditor: DR. W. A. WOOD.

Honorary Secretaries: DR. H. DOUGLAS STEPHENS, DR. J. W. GRIEVE.

Members of the Committee: DR. STEWART FERGUSON, DR. A. E. ROWDEN WHITE, DR. H. HUME TURNBULL.

Votes of Thanks.

Votes of thanks were accorded the Committee of Management of the Children's Hospital, to the Matron and the members of the nursing staff and to SISTER M. THOMAS. Various members spoke in highly appreciative terms of the devoted services of Sister Thomas, who has recently retired from the nursing staff of the Hospital. For thirty-two years she had been connected with the Children's Hospital and ever since the birth of the Paediatric Society had contributed in very large measure to the success of its meetings.

Cerebral Diplegia.

At the conclusion of the Annual Meeting, DR. LIONEL HOOP presented a boy whom he had brought before the Society at one of the meetings of last year. On that occasion the child, a cerebral diplegic, was very spastic and unable to walk by reason of adductor spasm. Thirteen months previously tenotomy of the adductor muscles had been performed. The child spent four months in a double Thomas's splint. Massage had been instituted and was still being carried out. Thyroïd extract had been administered for a time.

The boy was now able to take a few steps without support and was steadily gaining proficiency in walking. There had also been considerable improvement in his mental condition.

Diphtheria.

The remainder of the evening was occupied by a consideration of papers by DR. HELEN KELSEY and DR. F. V. SCHOLES.

DR. KELSEY discussed the Shick reaction, with special reference to technique and the interpretation of results, and included some observations on active immunization against diphtheria by means of toxin-antitoxin mixture.

DR. SCHOLES gave an extremely interesting talk on problems connected with the prevention and treatment of diphtheria. An important point emphasized by Dr. Scholes concerned the very great value for the administration of antitoxin by the intravenous route. He reserved this mode of injection for those patients who were profoundly ill and toxic; if 15,000 to 30,000 units were so administered, the results would be found to be dramatic. One such intravenous injection was, as a rule, all that was required, but occasionally it was advisable to supplement it with a subcutaneous injection the following day.

The suggestion of DR. H. BOYD GRAHAM that in young children in whom venipuncture was difficult, the intraperitoneal injection of antitoxin offered an advantage over the subcutaneous method, in that absorption was more rapid, was favourably received.

During the course of a brisk discussion many members availed themselves of the opportunity to obtain an authoritative opinion from Dr. Scholes on a diversity of practical points.

Naval and Military.

APPOINTMENTS.

THE following appointments, etc., have been notified in the *Commonwealth of Australia Gazette*, No. 17, dated March 2, 1922:

Australian Military Forces.

GRANT OF SUBSTANTIVE RANK ON THE RESERVE OF OFFICERS.

The Governor-General in Council has approved of the undermentioned officers being granted substantive rank on the Reserve of Officers, equivalent to that held by them in the Australian Imperial Force or the Australian Naval and Military Expeditionary Force, as the case may be, at the date of the signing of the Armistice, dated 1st January, 1921:

SECOND MILITARY DISTRICT.

To be Lieutenant-Colonels — HONORARY LIEUTENANT-COLONELS CHARLES BICKERTON BLACKBURN, O.B.E., SYDNEY JAMIESON, ROBERT GORDON CRAIG, CHARLES MACLAURIN, Australian Army Medical Corps Reserve, and HAROLD SKIPTON STACY, Reserve of Officers.

To be Majors — HONORARY MAJORS REGINALD EUSTACE McCLELLAND, ARTHUR EDMUND COLVIN, M.C., CLAUDE SEC-COMBE BROWNE and ARTHUR JAMES CAHILL, Australian Army Medical Corps Reserve; HONORARY MAJORS AUSTIN SYDNEY CURTIN, RUPERT DUFFY HEGGARTON, IDRIS MORGAN, ERIC PITTY BARBOUR and ARTHUR EDWARD MACHIN, Reserve of Officers; HONORARY MAJORS ALFRED WALTER CAMPBELL, ALFRED OSWOLD HOWSE, JOHN MORTON, HERBERT JAMIESON STEWART, ARTHUR EDWARD MILLS, WILLIAM FOSTER SIMMONS and JOHN BROOKE MOORE, Australian Army Medical Corps Reserve; HONORARY MAJORS EDMUND BRUCE MORTIMER VANCE, ERNEST NOËL BROUGHAM DOCKER, M.C., and WILLIAM RUDOLPH CLAY, Reserve of Officers; HONORARY CAPTAINS HUGH RAYSON, M.C., and BERTRAM VAN SOMEREN, Australian Army Medical Corps Reserve; HONORARY MAJORS CHARLES MICHAEL O'HALLORAN, HENRY CYRIL ADAMS, LAURENCE HUGH HUGHES and HENRY LAURENCE TOOTH, Reserve of Officers.

To be Captains. — HONORARY CAPTAINS BERNARD MOORE SAMPSON, DAVID CHRISTIE, CECIL ROY QUINN, ROBERT AUGUSTIN GARDNER, Australian Army Medical Corps Reserve; HONORARY CAPTAINS EDWARD LLOYD DAVENPORT PARBY, CEDRIC WILLIAM WHITING, M.C., HERBERT FABIAN ALSOP, CHARLES REGINALD PALMER, FRANK HOWSON, LESLIE ST. VINCENT WELCH, ALEXANDER CAMPBELL SMITH, GEORGE WILLIAM PARRAMORE, EDGAR WINN FOX DOLMAN, FREDERICK MAURICE PURCHAS, LIONEL MASON SNOW, GEORGE ALBERT BLUMER, M.C., GEORGE CRAIG HARPER, CHARLES SAUNDERS RENWICK, AMOS WALTER BOWMAN and JAMES DAWSON, Australian Army Medical Corps Reserve; HONORARY CAPTAINS JAMES WALTER STEWART McKEE, ARTHUR JAMES MCKENZIE FARGIE, LAURENCE EDWARD ELLIS, JOHN GRAY, IVAN CORONEL HAINS, JOHN A BECKETT DARVALL BARTON, ISAAC MANLY BARROW, M.C., JOHN GEORGE HUNTER, GEORGE BELL, O.B.E., EDWARD HAMILTON LOXTON, GEORGE LEIGH TOMLINSON and FRANK NEIL RODDA, Australian Army Medical Corps Reserve.

CHANGES, ETC.

THE following changes have also been notified:

FIRST MILITARY DISTRICT.

Reserve of Officers.

HONORARY CAPTAIN G. W. F. PAUL is transferred to the Reserve of Officers, Second Military District, 1st February, 1922.

HONORARY CAPTAIN J. K. PATRICK is transferred to the Reserve of Officers, Second Military District, 1st February, 1922.

HONORARY CAPTAIN G. W. SMITHWICK is transferred from the Reserve of Officers, Third Military District, 1st February, 1922.

THE resignation of MAJOR G. H. VERNON, M.C., of his commission is accepted, 27th January, 1922.

THE resignation of CAPTAIN V. N. B. WILLIS of his commission is accepted, 1st April, 1922.

SECOND MILITARY DISTRICT.

Australian Army Medical Corps.

LIEUTENANT-COLONEL W. E. KAY, D.S.O., is appointed from the Reserve of Officers and to be Major, 1st February, 1922.

CAPTAIN J. F. G. FITZHARDINGE, M.C., is appointed from the Reserve of Officers, 1st February, 1922.

Reserve of Officers.

THE temporary rank of Lieutenant-Colonel granted to CAPTAIN SIR H. L. MAITLAND is terminated, 30th June, 1921. THE temporary rank of Major granted to HONORARY CAPTAIN P. E. W. SMITH is terminated, 9th April, 1920.

HONORARY CAPTAINS G. W. F. PAUL and J. K. PATRICK are transferred from the Reserve of Officers, First Military District, 1st February, 1922.

THIRD MILITARY DISTRICT.

Australian Army Medical Corps.

LIEUTENANT (provisionally) H. N. MORTENSEN is transferred to the Reserve of Officers and to be Honorary Lieutenant, 1st January, 1922.

Reserve of Officers.

HONORARY CAPTAIN G. W. SMITHWICK is transferred to the Reserve of Officers, First Military District, 27th January, 1922.

CAPTAIN L. B. COX is transferred from the Reserve of Officers, Fourth Military District, 1st February, 1922.

THE date of promotion to rank of Captain of HONORARY LIEUTENANT THOMAS MUIR HENDRY, which appeared in Executive Minute No. 118/1921, promulgated in *Commonwealth of Australia Gazette*, No. 27, of 24th March, 1921, is amended to read 1st December, 1921.

THE temporary rank of Lieutenant-Colonel granted to HONORARY MAJOR W. E. JONES is terminated, 30th June, 1921.

THE resignations of HONORARY CAPTAINS H. E. JACKSON and J. FLEMING of their commissions are accepted, 1st January, 1922.

THE resignation of HONORARY CAPTAIN G. W. ARMSTRONG of his commission is accepted, 31st January, 1922.

FOURTH MILITARY DISTRICT.

Australian Army Medical Corps.

THE temporary rank of Honorary Major granted to CAPTAIN R. G. BURNARD is terminated, 2nd July, 1917.

SIXTH MILITARY DISTRICT.

Reserve of Officers.

THE temporary rank of Major granted to HONORARY CAPTAIN R. G. SCOTT is terminated, 30th April, 1918.

AWARD OF THE COLONIAL AUXILIARY FORCES OFFICERS' DECORATION.

Unattached List.

COLONEL (HONORARY BRIGADIER-GENERAL) R. H. J. FETHERSTON.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on April 3, 1922.

The following appointments were made:

MR. T. W. MURPHY, Demonstrated in Pharmacy.

MISS E. E. P. HAMILTON, B.A., B.Sc., as Half-Time Demonstrator in Physiology, in place of DR. BENDEICH (resigned).

MR. F. LEVERRIER, B.A., B.Sc., K.C., was, on the motion of DR. PUSSER, unanimously re-elected Vice-Chancellor for the current year.

With reference to the proposed invitation to PROFESSOR EINSTEIN to visit Australia after his observations in Java

in connexion with the solar eclipse in September next, the following committee was appointed to report to the Senate as to the best arrangements to be made: THE CHANCELLOR, VICE-CHANCELLOR, WARDEN, PROFESSOR DAVID, PROFESSOR MACCALLUM, PROFESSOR POLLOCK and MR. E. M. WELLISH.

ACTING PROFESSOR LAUNCELOT HARRISON, of the Department of Zoology, was appointed as a delegate to act on a conference of representatives of Museums and Universities of the different States to discuss the question of the restriction of export and disposal of types of Australian fauna and other cognate matters and to frame recommendations thereon, such recommendations to be submitted by the conference for ratification by the governing bodies of the Museums and Universities represented and, if so ratified, to be submitted to the State and Federal Governments for action. The conference will be held in Melbourne shortly.

A letter was received from DR. A. LYELL, resigning his lectureship in Clinical Dentistry, Faculty of Dentistry. It was decided to advertise the position.

On the recommendation of the Faculty of Science, it was decided that the subject of Entomology be added to the list of subjects specified in Section 8 of Chapter XIII. of University By-Laws (Science curriculum).

The following recommendations of the Professorial Board were adopted:

1. That the University By-Laws, Chapter XXI., be amended so as to permit Lent Term being shortened by one week and Trinity Term being extended by the same period, to provide common vacations with the Australian Universities.

2. That the following delegates be appointed to represent the University of Sydney at a conference of Australian Universities to be held in Melbourne on May 29 next: THE WARDEN, PROFESSOR CARSLAW, PROFESSOR HOLME and PROFESSOR LAWSON.

3. That Science Research Scholarship for a period of one year be awarded to: (i.) MARIE BENTIVOGLIO, B.Sc. (Honours, Class I., in Geology; Honours, Class II., in Botany; renewal). (ii.) IDA A. BROWN (Honours, Class I., and Medal in Geology-Mineralogy; Honours, Class II., in Mathematics). (iii.) R. S. HUGHESON (Honours, Class II., in Chemistry; Honours, Class II., in Organic Chemistry). (iv.) JESSIE K. STEEL (Honours, Class I., in Botany; Honours, Class II., in Geology-Palaeontology). (v.) MAY M. WILLIAMS (Honours, Class I., and Medal in Botany).

The Board has the honour to report that PROFESSOR HOLME, PROFESSOR PEDEN, PROFESSOR READ, ASSOCIATE PROFESSOR VONWILLER and MR. W. A. SELLE have been appointed representatives of the Teaching and Administrative Staffs on the "Advisory Committee of University Life."

On the recommendation of the Conjoint Committee for Tutorial Classes, the following appointment was approved:

DR. A. H. MARTIN, Lecturer in Psychology.

Obituary.

ALFRED FOSTER.

DEEP regret has been evinced by many of the older residents of the Wahroonga heights and by many of the older practitioners of Sydney by the news of the death of Alfred Foster, which took place on March 21, 1922. His friends had lost sight of him for several years, but had not forgotten the genial and courteous gentlemen who had taken a prominent place in the medical practice of the "North Shore" a score of years ago.

Alfred Foster was born in England in 1868. He was educated at Radley College School, Abingdon, and studied medicine at St. Mary's Hospital, London. He qualified as a member of the Royal College of Surgeons and a licentiate of the Royal College of Physicians in the year 1889. From the early days of his career he was handicapped by ill-health. After qualifying he served as a house surgeon at the Brighton Throat Hospital. A chronic intestinal affection caused him to seek alleviation in other climes for a few years before settling down to his life's work. He visited Canada and other countries until 1893,

when he arrived in Australia and settled at Wahroonga, to the north of Sydney. His undoubted ability as a competent general practitioner soon became known and his assistance was sought over a considerable district. His patients loved and trusted him and benefited by his skill and assiduous care. Notwithstanding his indifferent health, he continued to act as friend and medical adviser to a large number of the people living between Hornsby and Chatswood. Rich and poor came to him and all found him willing to and eager to help. In 1901 he was compelled to relinquish his practice on account of ill-health. For a couple of years he travelled and then he entered practice again, this time at Blenheim, in New Zealand. Four years later he again started on a quest for health. When in Europe he worked for a time at St. Mary's Hospital under Sir Almroth Wright at various bacteriological problems. He also spent some time at the Pasteur Institute pursuing his hobby. A little later he found a temporary amelioration of his symptoms at Las Palmas. During his travels his linguistic abilities served him in good stead. In 1915 he returned to New Zealand and settled in practice in Christchurch, where he was appointed to the position of Honorary Physician at the Christchurch Hospital. He conducted a general practice as well as a practice as a pathologist. Early in 1921 he returned to New South Wales to consult some of his colleagues. Unfortunately, they found that he was suffering from Hodgkin's disease and that his days were numbered. He bore his suffering with fortitude for a year. He leaves a widow, to whom the sympathy of many practitioners is extended.

Correspondence.

TROPICAL MEDICINE IN THE PACIFIC.

SIR: Your article of February 11 on "The Medical Problems of the Pacific" was very good to read here and much of it was particularly true for this group of islands.

Here Britain and France are in joint control. The population has been estimated at about 60,000 and the British Government last year, as their contribution to the health of the group, spent £320. Of this amount £250 was a grant to this Mission Hospital, which is the only attempt at a British medical service here. The French have a small Government hospital of their own. Australia has spent some money here in various ways, but nothing on medical matters.

For many tropical diseases there would be laboratory work of interest here, especially with filaria and a form of bony swellings which I cannot find described in the books. So far nothing of the sort has been attempted. The establishment of small laboratories at such places as this, with visits at intervals from an expert, might later grow into the Pacific Medical Service which you suggest in your article.

Yours, etc.,

VERNON DAVIES.

Paton Memorial Hospital, Vila,
New Hebrides, March 25, 1922.

LEAD POISONING AMONG QUEENSLAND CHILDREN.

SIR: I have no first-hand knowledge of the merits of the controversy respecting plumbism in Queensland. I have, however, very definite knowledge relating to the unusual frequency of papilloedema of children in Queensland.

Dr. Lockhart Gibson showed at the Brisbane Congress a number of cases of marked papilloedema in children, which he attributed to lead. In my experience, this condition in children in Victoria is very rare and I feel inclined to say that he furnished evidence of the existence of more cases than I have seen in my life in the southern State. There is evidently some factor operative in Queensland which is not operative in the southern State.

Yours, etc.,

JAMES W. BARRETT.

Melbourne, March 27, 1922.

"THE MEDICAL JOURNAL OF AUSTRALIA."

DEFECTIVE COPIES.

It has been discovered that in a small number of copies of last week's issue of THE MEDICAL JOURNAL OF AUSTRALIA one sheet of sixteen pages has been duplicated in the place of another sheet. Members or subscribers who have received defective copies, are requested to return them to THE MANAGER, THE MEDICAL JOURNAL OF AUSTRALIA, 30-34, Elizabeth Street, Sydney, as soon as possible. A complete copy will be forwarded to them in exchange.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered under the provision of *The Medical Act of 1867* as duly qualified medical practitioners:

BLEARBLOCK, ARTHUR, M.R.C.S. (Eng.), L.R.C.P. (Lond.), 1920, Brisbane.

LOWE, GORDON BRADLEY, M.B., Ch.M. (Univ. Syd.), 1915, F.R.C.S. (Edin.), 1921, Ingham.

PIPER, KEITH ALLENDER, M.B., Ch.M. (Univ. Syd.), 1921, Brisbane Hospital.

QUIN, BERNARD HASELDEN, M.B., B.S. (Univ. Melb.), 1920, Cairns.

Books Received.

EXPERIMENTAL PHYSIOLOGY, by Sir Edward Sharpey-Schafer, F.R.S., Professor of Physiology in Edinburgh; Third Edition, 1921. London: Longmans, Green & Company: Demy 8vo., pp. 131, with 90 illustrations. Price: 6s. net.

A SYNOPSIS OF MEDICINE, by Henry Letheby Tidy, M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (Lond.); Second Edition, Revised, 1922. Bristol: John Wright & Sons, Limited; Crown 8vo., pp. 915, with index. Price: 21s. net.

Medical Appointments.

DR. H. K. DEW (B.M.A.) has been appointed Surgeon to the Out-Patients' Department of the Melbourne Hospital.

DR. T. V. NIHILL (B.M.A.) has been appointed Temporary Resident Medical Officer at the Adelaide Hospital.

DR. N. C. K. LANE (B.M.A.) has been appointed to the post of Medical Officer, Workers' Compensation Department, State Government Insurance Office, Brisbane, Queensland.

DR. K. B. FRASER has been appointed a Resident Medical Officer at the Brisbane Hospital.

DR. R. A. A. MACQUEEN (B.M.A.) has been appointed an Official Visitor to the Reception House, Townsville, Queensland.

Medical Appointments Vacant, etc..

FOR ANNOUNCEMENTS OF MEDICAL APPOINTMENTS VACANT, ASSISTANTS, *locum tenentes* SOUGHT, ETC., SEE "ADVERTISER," PAGE XVIII.

BENEVOLENT SOCIETY OF NEW SOUTH WALES: Honorary Pathologist and Honorary Assistant Physician to Out-Patient Department, Renwick Hospital for Infants.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30-34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Hampden District Hospital Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 3, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, 6, Bank of New South Wales Chambers, St. George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

- APR. 15.—Northern Suburbs Medical Association, New South Wales.
 APR. 18.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 APR. 19.—Western Australian Branch, B.M.A.: Branch.
 APR. 21.—Eastern Suburbs Medical Association, New South Wales.
 APR. 21.—Western Medical Association, Cowra, New South Wales.
 APR. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
 APR. 26.—Victorian Branch, B.M.A.: Council.
 APR. 27.—South Australian Branch, B.M.A.: Branch.
 APR. 27.—Brisbane Hospital for Sick Children: Clinical Meeting.
 APR. 28.—New South Wales Branch, B.M.A.: Branch.
 APR. 28.—Queensland Branch, B.M.A.: Council.
 MAY 3.—Victorian Branch, B.M.A.: Branch.
 MAY 5.—Queensland Branch, B.M.A.: Branch.
 MAY 9.—New South Wales Branch, B.M.A.: Ethics Committee.
 MAY 10.—Western Australian Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)